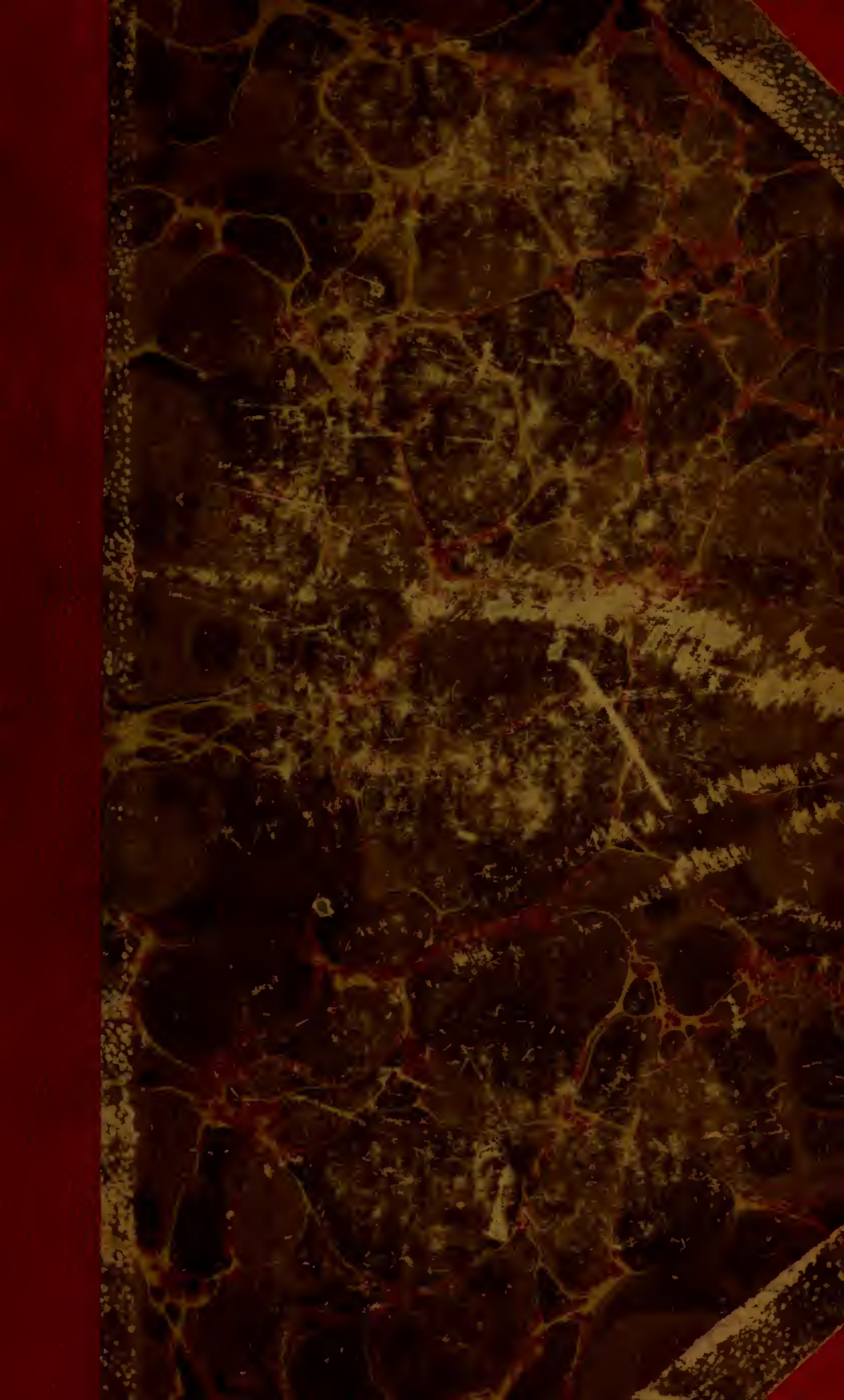

THE

CAROLINA JOURNAL

OF

MEDICINE, SCIENCE AND AGRICULTURE.

CONDUCTED BY

THOMAS Y. SIMONS, M. D.

Port Physician,

EXTRAORDINARY MEMBER, AND FORMERLY SENIOR PRESIDENT OF THE ROYAL PHYSICAL SOCIETY OF EDINGURGH, &c. &c.

AND

WILLIAM MICHEL, M. D.

OPINIONUM COMMENTA DELET DIES, NATURÆ JUDICIA CONFIRMAT.
Cic. de Nat. Deor.

VOLUME I.

FOR 1825.

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DISTRICT OF SOUTH CAROLINA.

BE IT REMEMBERED, that on the twenty second day of January, Anno Domini, one thousand eight hundred and twenty five, and in the Forty ninth year of the Independence of the United States of America, Thomas Y. Simons M. D. and William Michel, M. D. deposited in the Office, the title of a Book, the right whereof they claim as authors and proprietors, in the words following to wit:

"The CAROLINA JOURNAL of Medicine, Science and Agriculture, conducted by Thomas Y. Simons M. D. and William Michel, M. D.—*Opinionum commenta delet dies, naturæ judicia confirmat.*—Cic. de Nat. Deor."

In conformity with the act of Congress of the United States, entitled "An act for the encouragement of Learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies during the times therein mentioned," and also An act entitled "An act supplementary to An act, entitled "An act for the encouragement of Learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies, during the times therein mentioned" and extending the benefits thereof to the arts of designing, engraving and etching, historical and other prints.

JAMES JERVEY.

District Clerk, S. C. D.

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[OF VOL. I—FOR 1825.]

TO BENJAMIN B. SIMONS, M. D.

DEAR SIR,

Distinguished as you are in every branch of your profession, but preeminently so in Surgery, anxious as you have always been to exalt the medical character of your country, by awakening a spirit of emulation among all who have been honored with your acquaintance or instruction, and by encouraging them in the attainment, not only of their profession but of the collateral sciences, you are peculiarly fitted to become the patron of this Journal, the first ever published in this State. To you, therefore, we dedicate it, trusting it may not be unworthy the favour you have shewn it. Accept, dear sir, the united respects of yours, &c.

THE EDITORS.

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ERRATA.

The reader is requested to make the following alterations.

P. 1. note, for *caneleons*, read *cameleon.*
P. 2. line 10th for *highth*, read *heighth.*
Same P. line 37th for *generally* read *general.*
P. 12. line 25th for *continuation*, read *combination,*
P. 26, 7th line, for *hightens* read *heightens.*
P. 30, 41st line, for *pharmacentical*, read *pharmaceutical.*
P. 31, 6th line, for *others*, read *ethers.*
P. 32, last line, for *effects*, read *affects*
P. 33, 18th line, for *dianhea*, read *diarrhea.*
P. 34, 1st line, for *resemblence*, read *resemblance.*
Same P last line, for *appearnace* read *appearance.*
P. 38, 10th line, for *breath*, read *breathe.*
P. 42, 1st line, from the bottom, for *lesson* read *lessen.*
P. 44, 7th line, for *their* read *there.*
P. 45, line 29, for *neutralise*, read *neutralize.*
P. 47, 25th line, for *ritiated* read *vitiated*
P. 60, 27th line, for *adversive*, read *adhesive.*
P. 61, 27th line, for *unproper* read *improper.*
P. 62, 2d line, for *choaked*, read *choked.*

PROSPECTUS.

IT is with pleasure that we present to the public , the first *Journal of Science*, which has ever been published in this State. We feel sensible, that with it are connected many imperfections. Still it is important in the highest degree, as enabling us to keep up with the progress of knowledge throughout the world. In times gone by, and that not very far distant, the people of the United States, looked to Europe, as a child to a parent, for all their knowledge and instruction. They were the law givers in every thing scientific or intellectual ; and we were the mere instrument of these laws.

Our brethren of the North, increasing with their population in every department of mind, broke the shackles which bound them, and justly determined not only to think for themselves, but excite that knowledge which had been so long latent. Periodical works have been there established, respectable in the highest degree; and what is important, have been the cause of drawing forth their energy, talent, and resources. In the midst of this progression we have been stationary. While other countries, and our sister states, have been accumulating all their knowledge, and diffusing it among their countrymen, we have suffered ours to be lost, from the want of some stimulus to bring it into action, and the means of its perpetuation. There are no class of people, we will venture to say, who possess in a higher degree all the elements essential for greatness, and pre-eminence of every kind. But from various causes, an indolence and inactivity have unhappily encircled us, and it is difficult to escape their too fascinating influence. To throw off the shackles of sloth, and all its concomitant and distressing consequences, a spirit of pride and emulation should be awakened. We should feel that knowledge alone can give power and pre-eminence, and that our character and reputation is identified with that of the State. We should look around and examine what we have done as a whole, in the advancement of knowledge, and the consequent elevation of the moral condition of our species. We should compare our labours and our usefulness, with those of our brethren of the north, and the same rivalry should be in Science and Literature, as in Legislation.

We trust, however, that the time is rapidly advancing when our State will stand as elevated in every department of mind, as any of our sister states. *It is but for us to will and it must be so.* It is impossible to estimate how much may be done from small beginnings. Give but the neuclus, and the most beautiful chrystalline structures will aggregate. So in mind, give but the impetus, and it is astonishing the rapid accumulation and extension of knowledge which will result. When our thoughts and investigations can be embodied and exhibited, we feel some pleasure in our exertions, for we may receive the reward of our labour in the approbation of our countrymen. But when all our labour, all our research is suffered to become nugatory for want of diffusion, an apathy is produced, and we lose all incentive to action. There is too much knowledge, however, disseminating through every portion of the earth, and too much enthusiasm and steady perseverance in its attainment, for us to be inactive.

The great objects of Periodical publications, are, to awaken and form a taste for intellectual pursuits, and direct the mind to researches and investigations, which otherwise would never have been attended to. They embody the experience and investigations of a number of persons, and become essentially the intellectual archive of a Country. Their influence has been felt wherever they have been established; and facts and investigations which were hitherto confined to a few, have been communicated to an immense mass of population. Thus where barbarism and ignorance once existed, knowledge and refinement have been established, and minds once wasted in sluggishness and beastiality are now enjoying the exquisite and rational pleasures of intellectual research.

In this country, so vast in territory and diversified in character, increasing beyond calculation in extent, power, and population, presenting so many things useful and instructive, and affording an almost inexhaustible source of matter, for the curious, practical, and scientific, a Journal of this character is imperiously required. It is superfluous to impress further upon our readers, the necessity for a work of this kind among us. We think it would be almost insulting their understandings to do so, but as so many doubts have been expressed regarding the probable success of such an undertaking, we will be pardoned occupying their attention a few moments on this subject.

It is a fact unquestionably true, that we are absolutely ignorant of our power and resources until they are called into action; and we are too much disposed to shrink back from undertakings more from ideal than real difficulties. We are imitative as well as intellectual animals, and once an example is set us, we are very apt to follow. We have been told, that the people of the South, are more practical than Scientific, that there habits are indolent, and that they are more disposed to sensual, than intellectual enjoyment—We differ from this opinion. The intellectual is rapidly taking supremacy of the sensual. Look what a wonderful change has taken place in the intellectual aspect of the Interior portion of this State, since the establishment of the South Carolina college, and this will rapidly and progressively extend. We have never been fairly tried, and the world and ourselves are as yet unhappily ignorant of the resources, energy and talent, which we possess. The love of knowledge and enthusiasm in its attainment has come among us, we see it in our College, our Schools, our State Improvements, our Agriculture, and we believe and trust in Medicine and Science. We are not to be discouraged by lukewarmness, on the one hand, or scepticism on the other. The success of similar undertakings in other countries, were likewise questioned. But we find these predictions and doubts have been falsified, and why not among us? But admit, for argument sake, that we are supine and regardless of the progress of knowledge, and the intellectual character, of our State.—Does it follow as a matter of course, that we must continue to be so? Must we stand still while every other portion of the earth is moving? Is there any thing so essentially deleterious among us that we should be forever insensible to all that is attractive and lovely in existence, that we should be shut out from the only true source of happiness? We trust not. If such be at present our condition, it is high time that we should correct it. Our character and dignity require it of us. Our posterity imperiously demand it of us. We should endeavour to form and create a taste for science, if it does not already exist. We will not however carry this question any further. We think we have shewn sufficiently the folly of such assertions, and we confidently hope that the period is not far distant, when we will be as luxuriant in mind, as in the bountiful productions of our soil.

It is proper that we should state why we have combined Medicine, Science, and Agriculture in our Journal. Could these different departments of know-

ledge have met distinctively, with sufficient encouragement, it would be better that they should be separate; but as we rested our principal hope of encouragement from our native State, and trust in time for assistance from our sister States; we deemed it most prudent to form this combination, to afford a more efficient support, and awaken a spirit of emulation and love of enquiry among all our countrymen.

We have likewise made another innovation—the introduction of valuable articles from foreign Journals. Two motives have operated with us in this determination: the belief that it will add greatly to the value and usefulness of the Journal, and in a new work of this kind, we cannot trust wholly to ourselves or our friends for contributions. We shall receive all the most valuable periodical works of Europe; and as the improvements there, will be useful to us, their introduction must add greatly to the value of the Journal.

In conducting this work, we trust confidently in the support of our fellow countrymen. We feel satisfied they will contribute their talent and exertions.

One part of the *Carolina Journal of Medicine, Science and Agriculture*, will be devoted to original matter in each of these departments, and one to extracts from foreign periodical works.

CONDITIONS OF THE JOURNAL.

The Work will be published Quarterly, in place of every two months as mentioned in our first Proposals and Prospectus, and the price four dollars, in place of five dollars per annum, in consequence of there being fewer numbers in the year. Each number will contain one hundred pages, making a volume of 400 pages each year. Subscriptions payable semi-anually on the delivery of the first number in each half year, and no subscription received for less than one year.

All communications, must be addressed to the Editors, *post paid.* It is impossible any anonymous communications can be received in this Journal.

ART. I.

Observations on the Yellow Fever, as it occurs in Charleston, South Carolina: by THOMAS Y. SIMONS, *M. D. Extraordinary Member, and formerly Senior President of the Royal Physical Society, Edinburgh.*

* Although much has been written upon the *Yellow Fever*, and novelty cannot well be expected, it is proper that whenever it does occur, we should have a record of it, that those who come after us may have a just idea of the comparative changes which may have taken place in its character, and the manner of its treatment. I shall in this communication therefore give:—

1st. A succinct history of this disease in this city, and a particular description of it, as it occurred in 1824.

2d. An enquiry into the causes, which may have excited this disease.

3d. An enquiry into the nature of the disease.

4th. Its treatment.

5th. An account of the *deaths*.

6th. The Metereological Observations for the summer of 1824.

1*st. The History of this Disease*:

† Its first exhibition appears to have been in the year 1699 or 1700, and was called by Dr. Hewat, the infectious distemper, and considered by the inhabitants as a plague. In 1703, according to the same author, a disease similar in its nature, and destructive, and aggravating in its effects, again occurred. It again made its appearance in 1728. This summer was uncommonly hot and dry, the beasts suffered for want of water, and the fever raging with violence, swept off immense numbers of black and white. The state of the city, was truly deplorable, "as the town depended entirely on the country, for fresh provisions, the planters would suffer no person to carry supplies to it, for fear of catching the infection, and bringing it to the country. *The Physicians* knew not how to treat the uncommon disorder, which was

* It is by no means my intention in these observations, to collect the views or offer the opinions of any writers on *Yellow Fever*, so opposite are opinions of writers and so diversified their practice, that I am persuaded much arises from the various forms, which the disease assumes, in different situations, as well as different constitutions.—Writers therefore should keep this in mind, and be content to give their views and experience, without arrogantly impugning the opinions of others. The story of the Caneleons, should always be kept before a medical writer.

† This history is taken from Ramsay's History of South Carolina, and Dr. Chalmers.

suddenly caught and proved quickly fatal. The calamity was so general that few could grant assistance to their distressed neighbours. So many funerals happening every day, while so many lay sick, white persons sufficient for burying the dead, were scarcely to be found. Though they were often interred on the same day they died, so quick was the putrefaction, so offensive and infectious were the corpses, that even the nearest relation, seemed averse from the necessary duty." In 1732 and 1739, it raged and with such violence, that when at its highth, from ten to twelve whites died a day. It did not reappear until 1745 and 1748, and was then comparatively mild. A few cases occurred in 1753, and 1755, and a cessation took place, until 1792 with the exception of a few sporadic cases which happen more or less every year. "In the year 1792," says Dr. Ramsay, "a new æra of the Yellow Fever, commenced. It raged in Charlestown in that year and 1794, 1795, 1796, 1797, 1799, 1800, 1802, 1804 and 1807. It appeared slightly in the years 1803 and 1805, in both years its victims did not exceed 59. In the years 1793, 1798, and 1808, the disease is not mentioned at all, and in the year 1806 it is only mentioned as having occurred in a very few cases under particular circumstances. In its visitations it extended from July to November, but was most ripe in August and September. With a very few exceptions, chiefly children, it exclusively fell on strangers. The unseasoned negroes, were not exempt from its ravages, but they escaped oftener than other strangers; and when attacked, had the disease in a slighter degree, and if properly treated were more generally cured. Persons both black and white arriving from the West India Islands, enjoyed similar exemptions from the Yellow Fever, of Charleston. In the years 1796 and 1799, it raged with its greatest violence, but has since considerably abated, both in frequency and violence."*

From 1807, until 1817, our city was happily exempt from this distressing disorder. It then occurred in all its virulence and malignancy. It reappeared in 1819, but was less generally, although the disease was equally violent in its type. From thence there was a cessation until 1824, when it again raged in violence equal to any period in the annals of this country. The first cases were exhibited in a narrow dirty

* Ramsays History of South Carolina, P. 86, Vol. 2.

alley, occupied chiefly by debauched females, and sailors, from thence it extended among the shipping, then generally attacking strangers and latterly children. Individuals who had lived here many years but had not spent a yellow fever year here, died of it, these were generally attacked at the latter period of the season, when the system was undergoing a change. Several cases were known of persons being seized and dying, who had been here in 1819 and even 1817, and some it has been asserted were sick of fever in that year, but of what character the fever was, it is impossible to determine. There were two patients whom I attended, who had been constantly trading between Cuba and Charleston, for many years, that were seized as violently as any cases I witnessed, and who died in four days. Children, some as old as ten years, and one as old as fourteen. natives and inhabitants of Charleston, died with this disease; many negroes from the country, were seized, but the disease was much milder and few deaths occurred among them. Independent of the distresses which occurred in the city, the disease broke out with dreadful malignancy among those who had sought refuge from its ravages on Sullivans Island, a complete sand bank, about 6 miles from the city, which has been hitherto considered a secure retreat. The cause of its occurrence there may be from the dense population, the uncomfortableness of the houses, the accumulation of filth and formation of made land, and the imprudence of persons residing there under the full confidence of their exemption. Each and all of these may have operated. Other causes may be offered, and have been mentioned, such as miasma, from the contiguous main land; but the inhabitants in the village, on that land, were exempt from the disease, and to a canal near the fort where the offal was thrown; but if this was the sole exciting cause, it appears singular that the soldiers should have been the last affected and they but partially. I am firmly persuaded, very many received the disease in town, andthat it remained latent until some exciting cause brought it into action, yet there were many children who took the disease months after they left the city, and these must be attributed to the first cause. Charleston neck, which adjoins the city, and which is all of original land, was quite healthy, strangers residing there generally escaped, and in almost every instance where it did occur, the cause could be traced to the individuals having exposed themselves in the city. From this general statement of the

disease as it occurred in 1824, which I believe correct, I would draw the following conclusions.

1st. The Yellow fever, is endemic of Charleston, and has its origin in causes there.

2d. All persons, who have not spent a Yellow Fever year there, are liable to this disease, and it is questionable if they are wholly exempt until they have had the disease.

3d. Children from the age of one year to twelve years, are susceptible of this disease, although not in an equal degree with strangers.

4th. Persons living in warm latitudes are liable to this disease, but in a less degree than those of cold latitudes.

5th. Persons born and raised in Charleston, but, who have lived for some time in cold latitudes are liable to the disease.

6th. The disease is more prevalent and general in places most thickly populated, and where the earth has been made, although no place within the city is exempt.

7th. Charleston Neck, where the soil is original, is greatly exempt, although it would be impossible to say wholly so.

8th From cases which have occurred, it appears very questionable if the disease cannot be twice taken; of this, however it is impossible to be accurate.

These are the general views which I have taken from my observations this year. The doctrine of Contagion has occupied so largely the attention of Medical writers, and such an immense mass of contradictory and unsatisfactory statements have been offered on both sides of the question, that I shall not occupy the attention of the reader on this point. I believe we are as far remote from the settlement of this question as when it was first agitated. It is necessary however, to state that the Physicians of Charleston are generally non-contagionists, and there can be no question that the Yellow Fever, as it occurs here, arises wholly from causes which exist among us.

II. We shall enquire into the cause or causes, which give rise to this disease. It is evident that in those places where there is the greatest degree of vegetable and animal matter, and the greatest accumulation of filth, the air must necessarily be most noxious, and the disease most virulent; still if these were the sole causes of this disease, it should occur every year as the same causes every year exist. The same may be applied to the state of our drains, and likewise

to the artificial formation of a great part of Charleston. It has likewise been observed that in hot and dry, as occurred in 1824, or hot and moist as occurred in 1817, the disease prevailed with equal violence. The winds have likewise varied in different years, when this disease has occurred, so that we can attribute it to neither of these causes alone. In 1824, there was a great deficiency of thunder and lightening, and the same thing was observed in 1817, and 1819.

It has been mentioned* that in every year. in which this disease has occurred, there has been a deficiency in the equilibrium of the electrical fluid, as we have not however, a full statement of facts on this subject, we can as yet, only think it highly probable that this circumstance may have a material influence.

Assuming however, as a fact, that there is a deficiency of thunder and lightening every year when this disease prevails ; the following explanation would be highly plausible. The City of Charleston was originally intersected with creeks, and a quantity of marsh in the midst of it. These creeks and marshes, were filled up with wood, and the offals of the city composed of an immense mass of corruptible matter, a deleterious miasma or vapour is constantly arising from the surface, from this cause, and the accumulated filth which daily occurs. The concussion of the electrical fluid, by producing a chemical change, destroys or neutralizes its vitiated powers. The dificiency of the balance of the electrical fluid, therefore suffers this vitiated and deleterious miasma, or vapour, to act with all its virulence. The thunder and lightening then according to this view, is the corrective, when it does occur. One circumstance corroborative of this is, that in all places, such as Mazyckborough, Charleston Neck &c where the soil is original, persons are generally exempt, if they remain in those situations. † I have thrown out these observations merely as suggestions, which future experience may either confirm or destroy. Perhaps however, after all, altho' it may be an "*opprobrium* medicorum we may be obliged to say as the venerable Dr. Gregory said regarding another subject, " Causa latet, et fortasse diu latebit." It is certain however, that cleanliness is all important, and could our streets be all paved, and the marsh and low land be filled up with some other materials than the Scaven-

* See Shecut's Essay on Yellow Fever, 1817.
† See Shecut's Essays

gers offal now used, we might hope for better things. The experiment is worth the trial, if our means could accomplish the ends.

III. The next consideration is the nature and character of this disease So much has been written on this subject, that it would appear almost superfluous to offer any thing; nevertheless as opinions are so diversified on this point, and it is my object to give my own views arising from my own observations, unbiased by the opinions of others, I shall unhesitatingly offer them. I believe, that from some unknown principle a change takes place in the pulmonary blood; that an atony takes place in the arteries, and a congestion necessarily in the veins. That the congestion, although universal, is more particularly so in the whole intestinal canal, which is the especial seat of the disorder; that the congestion of the brain which frequently occurs, arises from the previous congestion of the intestines, and that when the congestion of the intestines is relieved by any depleting method, the congestion in other organs will likewise be relieved. The primary seat of this disease, then according to this view, is the whole intestinal canal, and all other parts are secondarily affected.

Further, and what is of great importance, in the treatment of this disease, it appears to me that there is an atony of the liver, arising from a congestion of the vessels of the intestines, thereby preventing a free circulation in that viscus, and in this manner a phenomenon apparently somewhat anomalous in this disease, the alternate passage of black vomit and bile, may be explained. By active cathartics the congestion of the intestines is partially relieved; the circulation in consequence, becomes freer, the circulation of the blood in the liver becomes likewise freer, and the secretion of bile, the necessary result. I believe likewise that the black vomit, as it is termed, is a mixture of extravasated blood, from the capillaries of the intestines, with the mucus and other secretions. Bilious Fever and Yellow Fever, are obviously distinct, and the grand distinction between them is, that in Bilious Fever the determination of the intestinal circulation is to the liver; in Yellow Fever, to the intestines themselves. In the one there is an increased action of the Liver, in the other an atony. I am persuaded very many have different views, and shall offer no argument in their support, but proceed to give a detail of the symptoms of this disease, and leave the reader to draw his own inferences.

This disease has but one paroxysm. and commences suddenly, with shiverings, sometimes none violent pains in the back, head, loins and legs, a general restlessness, and uneasiness is felt. The eyes are turged with red blood, and acutely sensible of light. The face is flushed, a great heat is felt in the head, thorax and abdomen, with extremities often, of not more than natural heat. The pulse is variable, sometimes intermitting, sometimes excited, sometimes natural, but most frequently intermittent or oppressed. The tongue is variable, sometimes moist and clean, sometimes red, and at other times parched and dry or moist, but always there is intolerable thirst. The appearance of the skin varies materially. In some little or no change occurs, generally however, there is either a black and blue appearance, like a bruise or a yellowness of skin resembling an ecchymosis.—The black and blue appearance is most frequently in plethoric habits, and these run most rapidly into the gangrenous state. Gangrene, as far as my observations extend, first appears along the whole spine. In such cases, death is inevitable. These appearances seem to me to arise from a stagnation of the capillaries of the skin, and a decomposition of the blood exactly as what takes place from any violent contusion. They vary according to the habit and constitution of the individuals attacked, and it is all important to attend particularly to this, in the treatment of this disease. Regarding the prognostic of this disease, we should be particularly cautious in expressing it, for although there are certain symptoms which may materially assist us in giving an opinion, the most experienced physicians, have been so often deceived, as to make it more prudent to hazard no positive opinion whatever, and for us never to believe our patients safe, until perfectly recovered.*

IV. Treatment.—I feel some delicacy in obtruding my opinion of the treatment of this disease, after so much has been written on the subject, I do it the more willingly, however, in despite of the censure of arrogance, which may be cast upon me, because there are such a variety of opinions, and so great a disposition to empiricism as well as fashion in the treatment of this disease, some particular medicines are

* The fourth night however as far my experience extends, is generally critical, and the black vomit most frequently happens on the fourth day. I have likewise observed that in those whose skins are blue and respiration hurried, the disease is most formidable, and death most frequently occurs. In these cases, I think bleeding the only hope.

extolled as specifics and consequently, some practitioners overlook the various modifications which arise from a variety of causes in their unbounded confidence in their remedy; many indeed are so completely warped in their feelings regarding the remedies they adopt, as to be sceptical in the success of any other treatment, and are disposed to impugn the veracity as they condemn the opinions and practice of those who differ from them.

It is an old and just saying, and should always be kept in mind, especially by Physicians, that in proportion as we increase in wisdom and true knowledge, does our modesty in our own, and liberality to the opinions of others increase. We should be cautious in adopting theories, and being wrapped up in those we adopt, and equally cautious, in hastily condemning.

This should be the principle of action of every one who wishes to attain truth, and of Physicians in particular, from the uncertainty, at best, of all their remedies, and the innumerable shapes in which disease presents itself, from the innumerable varieties of constitution.

To some, these observations will appear irrelevant; but every individual who was in this city, will remember with regret the mutual and open condemnations of practice which occurred among medical men, and the agitation it excited in the public mind. Indeed so great was the feeling, that many individuals were afraid to call in Physicians least they should give Calomel, and many lives were, I am persuaded in this manner lost. The people in their trepidation and horror at the termination of a few cases awfully, lost sight of a fact, that the abuse of a remedy is by no means to interdict its use, and could make no distinction between the enthusiast who practised mechanically, and the man of judgment.

The first stage of this disease I have said to be congestive, arising from an atony in place of an increased action of the heart and arteries, that the congestion although more or less general, has its primary seat in and direction to the intestines. The general indication then, is, to releive this congestive or oppressive stage. If their be a great determination to the head, an oppressed pulse, and a hurried respiration, a large bleeding would be necessary. If any indications should prevent this, the cold bath may be applied, particularly if there

is a disposition to reaction.* This by abstracting the determination of the blood from the internal organs and drawing it to the surface, often prepares the system admirably for the subsequent treatment, and facilitates the cure. If a reaction is not to be anticipated, the tepid bath should be substituted. It is not always, however, that the practitioner will find attendants sufficiently scrupulous in the regmen necessary in the application of the bath. In many cases neither bleeding or the cold bath are positively indicated or convenient. In their lieu the continued use of ardent spirits and cold ice water should be applied, especially to the head, taking care to watch the change of temperature which may occur — These are the general plans for obviating local determinations by exciting an action on the cutaneous surface. Our next consideration is, to remove the evil which already exists, and if it be a fact, as I assume, that the primary derangement is a congestive stage of the stomach and intestines, our indication would be to relieve them of their oppression. To produce this object, I have always given, (except where peculiar cases produced a contraindication,) a combination of the decoction of Polyg. Seneka, Salts and Tartar, until a free action was produced. I give the Tartar† that it may disgorge any indigested matter in the stomach, as persons are often and most frequently attacked with this disease soon after eating, and I deem it less likely to produce irritability to relieve the stomach at once of a mass of matter, which under its condition must be oppressive, than that it should pass through the long convolutions of the intestines. Besides I have found it take off a constrictive pain evidently arising from a spasm of the Ductus Communis Choledochus, and powerfully co-operates with the Cathartic Medicine conjoined. I give a large proportion of the Salts, that the Cathartic should be greater than the Emetic, and that after a few ope-

* I am firmly persuaded that the cold bath applied, except when there is a disposition to reaction is highly deleterious, and I believe it is in consequence of not attending to the state of the system, in applying this as well as other remedies that so many disappointments have been felt, and such varieties of opinions regarding their good effects have been offered.

† I am aware that there is a very great prejudice against the use of emetics in this disease, arising from an apprehension of keeping up a continued irritation. This I am persuaded is more ideal than real. The fact is, the stomach when persons are first taken with this disease, is full of indigested matter, and the vomit by withdrawing this quickly relieves the oppression and irritability. I cannot say I approve of emetics, except when used, connected with cathartics. Thus combined, I deem them invaluable in the first stage of this disease, and many other fevers. I can affirm that I do not remember its having produced irritability in any one case, although I did not always use it, and have found it in several cases take off an acute spasm of the common duct of the liver

rations upwards, a powerful peristaltic motion should take place. The Salts act powerfully on the exhalents, and by so doing must relieve considerably the congestion of the Intestines. The Polygala Seneka is added, because it is a tonic, and has a great action towards the surface. I withdraw the Tartar, and continue the Snake Root and Salts, assisted with the cold applications, until I obtain copious discharges from the bowels. The first indication of their good effects is a removal of the pain in the head, legs and loins, especially the two last. Having obtained a cessation or partial relief of the pains arising therefrom, our next object must be to produce an equilibrium in the organic structure. This stage I would call the alterative. It is now, and not in the commencement, that the efficient and salutary effects of Calomel are to be expected, and in this stage I have generally found a comparatively small proportion produce a complete glandular change. In its exhibition our attention must not be directed to the Salivary Glands, regardless of other pressing symptoms which may occur, for it must be kept in mind that the salivary excitement is only an evidence of a complete change in the absorbent and glandular systems, and if we lose sight of the bowels, a congestion may again occur, which will undo all that has been already obtained. In this stage I give two grains of Calomel every hour and a half, and purge it off if necessary with Castor Oil, Snake Root and Salts, or any other purgative, most suitable to the patient. Injections here are beneficial, and often produce every thing desired without having the Stomach irritated with too much medicine. I have seen, by pursuing this method, thirty grains of Calomel produce every thing to be desired. Large doses it must be remembered act as sedatives, and our object is to obtain an alterative action. As a purge it would be unsound to use Calomel when we have so many other more agreeable efficient and active agents. When the salivary excitement takes place, we are by no means to relax and to regard our patients as safe, for by neglect or exposure a relapse may take place, and death ensue. I lost a patient who was profusely salivated, that exposed himself, and was imprudent in his diet Five days after he had been salivated, and without fever, he heard some news which distressed him, he expossed himself, took a relapse, in 24 hours had the black vomit abundantly, and in 12 hours more died.—He was at his death labouring under profuse salivation.

Our third indication is to give tone and action to the general system, and to watch attentively the Chylopoetic viscera. This, it is true, is the convalescent stage, yet we should remember that from a want of due attention to this stage, chronic affections take place most distressing in their consequences, and a neglect of it is not unfrequently a cause of relapse. The great desideratum is to keep up a gentle stimulus upon the Intestines, and by this means to bring the organs to their natural tone, that they might perform their proper functions. To do this a strict attention should be paid to diet. Convalescents are too much disposed to run into excess,and to produce an engorgement, or in other words to eat more than the digestive organs can well manage. In such cases it is evident an oppression must be the consequence, and from the undue stimulus there is very apt to be an irregularity in the circulation of the parts, and it must be kept in mind that all the abdominal viscera are intimately associated in their blood-vessels, and derangement of one of the organs will be the result. To illustrate this, it may be remarked that in Intermittent Fever, from neglecting this circumstance an undue determination is very apt to take place to the spleen, producing what is familiarly called by the people of this country Ague Cake. In like manner in Bilious or Yellow Fever a chronic derangement of the Liver, or Chronic Hepatitis as it is termed, not unfrequently happens.*

The prescriptions suitable to this stage are strong infusion of bitter substances, such as quassia Columbo, &c. I have found some benefit from the following plan: I have combined Aloes and Rhubarb together, so as to produce at least one free evacuation each day, and given the Nitric acid, say one drachm to a quart of water, a wine glass diluted according to the taste of the patient three times a day. It is immaterial however what remedies are used, if they are calculated to produce the results which nature seems to indicate. I cannot conclude this part without observing that in the treatment of all our Fevers, the attention to this stage is of the utmost importance, and that its neglect has produced more misery and distress than is generally calculated.

I have thus given a general treatment of this disease.—There are many modifications which occur that will require

* Several persons who recovered from the Yellow Fever this Summer, have had subsequently the Jaundice.

particular treatment, and which must be left wholly to the judgement of the practitioner. The employment of blisters for instanee are sometimes peremptorily required. I shall only remark that when they are applied they ought to cover a considerable surface, so as to produce a general and not merely a topical action. Wherever external stimulants are required, I must confess however I give a decided preference to Synapisms as they produce a quicker action. The patients are likewise much troubled very frequently with retchings from the quantity of wind on the Stomach. The lime water here with Gentian or Columbo is of service, but it were worse than useless to offer particular remedies for the variety of symptoms which may present themselves. They are many and various, and to obviate them must depend upon the skill and judgement of the practitioner.

It will be expected that I should not pass over the management of so important a symptom as black vomit. Regarding it; there have been several remedies used, sometimes with success; but we are more generally disappointed when it arrives to this. There have been several cases which have recovered, but generally it is the reverse. Large blisters and synapisms have been applied to the whole abdominal region and extremities. Injections given, and a free use of brandy and water. In one case a child who had the black vomit asked spontaneously for the brandy and water, which was given it, and it recovered. A continuation of tincture of Gentian Magnesia and Epsom Salts, has been sometimes of service. The Acetas Plumbi has been greatly used, as well as Ol: Terebinth: Camphor, and brandy, and many other prescriptions, yet although each and all of them may have been in some cases beneficial, we cannot lay much stress upon the peculiar good effects of any particularly. To rest confidently on any of them is a sure way to meet with disappointment.

Before concluding a few precautions will not be amiss.— It is all important that the patient should be kept as quiet as possible, and no persons admitted into the room except those who are in actual attendance. It must be remembered that most persons attacked with this disease view their case as hopeless, and they anxiously watch the countenances of those who come to see them, and few have the discretion or power to control their feelings. This independent of the constant excitement which is kept up in the patient, would

be a sufficient reason for strictly attending to this precaution. The inhabitants from a generosity of feeling and sympathy, not surpassed in any country, visit the sick, and it is the business of the Physician to tell them that although their motives are good, the practise of it would be highly deleterious.

It must be likewise remembered that fear operates powerfully in this disease, and every thing should be done to obviate its deleterious consequences.

In conclusion, I would remark that in the treatment of this disease, modified so materially according to the habit and constitution of the patients, the mind ought to be divested of all preconceived opinions, and be governed wholly by observation and judgment. The experience of every observing and practical Physician will evince that what would be beneficial to one patient would be destructive to another, and we must all look only to general indications, and leave the modifying symptoms to our judgment and observation.—There can be no particular specific for any disease, and he who blindly follows one particular plan, regardless of the indications for other treatment, goes on with the arrogant determination that the constitution and disease shall accommodate themselves to his views, and not he to their indications. I assert distinctly, that whoever follows undeviatingly one course of practice in this disease, yields up his judgment, forgets the Physician, and essentially assumes the Empiric

It will be expected that something should be said regarding the preventitive for this disease. There is in truth none: neither constitution, age, sex, or all precautions so frequently laid down can be depended on. After passing through a great portion of the season, the slightest exciting cause will bring it violently into action.

The strangers only alternative is flight, or submission to the doubtful chance of recovery, or escape from the disease. Few escape taking the disease, and they are extraordinary. It is a source of regret that our climate is sometimes so inhospitable to strangers, but it is more serious when it attacks our children. This is a source of much agitation and terror, yet I am persuaded that it is much better for children to remain and pass through the ordeal of a Yellow Fever year, than be withdrawn. First, because they must in more advanced periods be from their occupations exposed to the

disease, and second, because although a few cases distressing in the highest degree occur; the cases of death among children by referring to the deaths of 1817, 1819, and 1824, will be found in comparison to adult strangers few. From these facts it must appear highly reprehensible to every reflecting mind, in parents withdrawing their children from that climate where they are destined to live, and from their native city to which they must ever be attached, and the prosperity of which ought to be intimately associated with all their views and expectations.

V. We come next to an account of deaths. In looking back to the Medical History of this city, it will appear that the Yellow Fever in its earliest settlements, raged with violence, and swept off an immense number of persons indiscriminately, natives as well as strangers, and what was singular the country was considered a safe and healthy retreat. We can very well account for Charleston being thus unhealthy from its situation. Low in site, and intersected with creeks and marshes, it could not be otherwise, and the mortality the necessary consequence. At first Physicians were entirely ignorant of the treatment of this disease, and to be seized with it was to die. No doubt fear operated then as it even now does, by its depressing power to accelerate the dissolution of very many sick.. It was viewed with the same horror as the plagues of Egypt, and considered beyond the power of art to arrest. Few ever recovered, and they were considered uncommonly fortunate. Now the number cured are infinitely superior to the deaths, and the question now is—Not how many have you cured? but how many have you lost? There are no positive data upon which we can make a comparison of the number of persons cured in proportion to the number affected, because we have not a list of those who were taken sick. Physicians neglecting to report their cases, and the comparative population would not give us any just idea, as it fluctuates materially every summer.

Dr. Hewat, observes, that in 1728 the Physicians knew not how to treat the uncommon disorder.

In 1732, when the population must have been comparatively small, at the heighth of the disease from 8 to 12 whites died a day, which far exceeds any mortality which has occurred in this city in its worst periods since.

The following statement of deaths I copy from Dr. Ramsay.

"In 1799 : : : : : : 239 Deaths.
1800 : : : : : : 184
1802 : : : : : : 96
1804 : : : : : : 148
1807 : : : : : : 162

In the years 1796, and 1799, it raged with its greatest violence, but has since considerably abated, both in frequency and violence. This abatement is partly owing to the diminished number of subjects: for strangers have been cautious of residing in, or even visiting Charleston in the warm months. It is also to be in part ascribed to a more judicious treatment of the disease; for Physicians now cure a greater proportion of their patients, laboring under it, especially when they apply for relief in its first stage, than some years ago, when it was a new disease in the practise of the eldest and most experienced in the faculty."*

The following is a list of deaths from Yellow Fever in 1817, 1819, and 1824, as taken from the records of the Medical Society, by myself. They include only those who died within Boundary-street, or the City, proper.

1817.

No. of Deaths.	*Adults.*			*Children under 12 years.*		
	Males.	Females.	Total.	Males.	Females.	Total.
268.	164.	56.	220.	25.	23.	48.

In July there were 3, August 80, September 149, October 33, and November 3.

1819.

No. of Deaths.	*Adults.*			*Children under 12 years.*		
	Males.	Females.	Total.	Males.	Females.	Total.
172.	130.	24.	154.	13.	5.	18.

In August there were 55, September 97, October 20.

1824.

No of Deaths.	*Adults.*			*Children under 12 years.*		
	Males.	Females.	Total.	Males.	Females.	Total.
236.	160.	32.	192.	17.	27.	44.

In August there were 32, September 145, October 42, and November 17. In this year on the 18th of September there were ten deaths, 11th, 12th and 13th eight each day, and the 14th six. It must be kept in mind that some died in the suburbs of the City, and very many on Sullivan's Island, which if added to the list of 1824, would increase it

* Ramsay's South-Carolina, p. 86, vol. 11d.

considerably, and I presume those of the preceding years.

VI. I shall now as my last duty give the meteorological observations for 1824. as taken from the books of the board of health—the accuracy of which may be depended on. The Thermometer from which the Thermometrical observations were taken was placed in the City Hall, and would give a fair estimate of the heat of the atmosphere in the shade, although the inhabitants generally, in their houses, would experience a more intense degree of heat, in consequence of their confined situations.

AUGUST, 1824.

DAYS.	9 *o'clock.* Ther.	Wind.	Wea.	12 *o'cloek.* Ther.	Wind.	Wea.	3 *o'clock.* Ther.	W'd.	Wea
1. Sunday,	85	SW	Clear,	88	SW	Clear,	89	wsw	Rain
2. Monday,	86	SE	"	85	SE	"	85	SE	Clear
3. Tuesday,	84½	SSE	"	87	SSE	"	87	S	"
4. Wednesday,	84	S	"	88½	S	Cl'dy.	84	NE	Rain
5. Thursday,	80	NE	Cl'dy.	81	NE	"	83	E	Clear
6. Friday,	78	ENE	"	79½	ENE	"	79½	ENE	"
7. Saturday,	80	ENE	"	82	E	"	81	E	"
8. Sunday,	81	E	"	82	"	"	81	SE	Cl'dy
9. Monday,	79	E	"	84½	"	"	85	E	Rain
10. Tuesday,	85	E	"	84	"	"	85	E	Cl'dy
11. Wednesday,	80½	SW	"	81	WSW	Rain,	79	SE	Rain
12. Thursday,	81	SE	"	82	SW	Cl'dy.	82	NW	"
13. Friday,	82	NE	Clear,	81	ENE	Clear,	81	ENE	"
14. Saturday,	78	NE	Rain,	78	NE	Rain,	76	NE	"
15 Sunday,	75	NE	Clear,	75	NE	Clear,	75	"	Clear
16. Monday,	75	NE	Cl'dy.	75	"	Cl'dy.	77	NE	Cl'dy
17. Tuesday,	74	N	Rain,	75	"	Rain,	75	"	Rain
18. Wednesday,	74½	NW	"	76½	NW	Cl'dy.	79	NW	Clear
19. Thursday,	79	W	Cl'dy.	84	SW	Cl'dy.	82	W	"
20 Friday,	81	W	Clear,	82	W	Clear,	82	"	"
21. Saturday,	83	W	"	85	"	"	83	"	"
22. Sunday,	84	W	"	86	"	"	86	"	"
23 Monday,	83½	S	"	86	S	"	85	S	"
24. Tuesday,	83	S	Cl'dy.	82	"	Cl'dy.	82	S	Rain
25. Wednesday,	80	SW	"	82	"	"	81	"	Clear
26. Thursday,	82	E	Clear,	83	"	Rain,	83	"	"
27. Friday,	83	S	"	85	"	Clear,	81		Rain
28. Saturday,	83	S	"	84	SW	Rain,	85	W	Clear
29. Sunday,	82	S	"	84	S	"	85	SW	Rain
30. Monday,	81	W	"	85	SW	Clear,	85	W	Clear
31. Tuesday,	78	NW	"	79	NW	"	81	SW	"

SEPTEMBER, 1824.

DAYS.	9 *o'clock.*			12 *o'clock.*			3 *o'clock.*		
	Ther.	Wind.	Wea.	Ther	Wind.	Wea	Ther.	Wind.	Wea
1. Wednesday,	75	NW	Clear	79	NW	Clear,	82½	NW	Clear
2. Thursday,	78	W	"	81	W	Cl'dy,	81	W	"
3. Friday,	81	"	"	84	"	Clear,	83	"	"
4. Saturday,	83	SW	"	86	SW	"	85	SW	"
5. Sunday,	84	"	Cl'dy	86	"	"	85	"	"
6. Monday,	84	"	Clear	83	W	"	81	N	"
7. Tuesday,	83	E	Cl'dy	82	E	"	82	E	Clear
8. Wednesday,	79	"	"	80	"	Cl'dy.	79	"	Cl'dy
9. Thursday,	74	NE	Rain,	73	NE	Rain,	71	NE	Rain,
10. Friday,	69	NE	"	71	"	"	71	"	"
11. Saturday,	72	NNE	Cl'dy	74	NNE	Cl'dy.	73	"	Cl'dy
12. Sunday,	73	NE	Rain,	74	NE	Rain,	73	"	"
13. Monday,	79	"	Cl'dy	80	NE	Clear,	79	"	"
14. Tuesday,	82	E	"	82	"	Cl'dy,	82	"	Rain,
15. Wednesday,	80	SE	"	80	SE	"	81	"	Cl'dy
16. Thursday,	81	S	"	82	SW	"	81	S	"
17. Friday,	79	"	"	81	S	"	80	"	"
18. Saturday,	78	E	Clear	79	E	"	78	E	"
19. Sunday,	76	NE	Cl'dy	77	NE	"	76	NE	"
20. Monday,	75	N	"	74	N	"	74	N	"
21. Tuesday,	73	"	"	75	"	"	76	"	Cl'dy
22. Wednesday,	75	NE	Clear	77	NE	Clear,	77	NE	Clear
23. Thursday,	75	ENE	Cl'dy	76	"	Rain,	75	"	Rain,
24. Friday,	69	NE	"	69	"	Cl'dy,	70	"	"
25. Saturday,	68	"	Rain,	70	"	"	70	"	"
26. Sunday,	68	NE	Rain,	69	E	Rain,	70	E	"
27. Monday,	65	NW	Cl'dy	68	NW	Cl'dy,	68	NW	Cl'dy
28. Tuesday,	69	NW	Clear	74	N	Clear,	72	N	Clear
29. Wednesday,	71	W	Clear	75	W	Cl'dy,	73	W	"
30. Thursday,	71	N	"	73	N	"	71	N	"

OCTOBER, 1824.

DAYS.	9 *o'clock.* Ther.	Wind.	Wea.	12 *o'clock.* Ther.	Wind	Wea.	3 *o'clock.* Ther.	Wind	Wea.
1. Friday,	71	NE	Clear,	74	NE	Clear.	72	NE	Clear
2. Saturday,	71	"	"	73	"	"	73	"	"
3. Sunday,	71	"	"	73	"	"	73	"	"
4. Monday,	72	"	"	76	"	"	75	"	"
5. Tuesday,	75	E	"	76	E	"	76	E	"
6. Wednesday,	76	SW	Rain,	75	SW	Rain,	75	SW	Cl'dy
7. Thursday,	74	NW	Cl'dy.	75	NW	Clear,	73	NW	Clear
8. Friday,	71	N	Clear,	74	N	"	73	N	"
9. Saturday,	72	E	"	74	E	"	75	E	"
10. Sunday,	73	"	"	74	"	"	75	"	"
11. Monday,	73	NE	Cl'dy,	74	E	"	76	"	Cl'dy
12. Tuesday,	79	S	Cl'dy.	81	S	Clear,	80	S	Clear
13. Wednesday,	78	S	"	79	"	Cl'dy.	80	SW	"
14. Thursday,	79	SW	Clear,	81	SW	Clear	79	SW	Cl'dy
15. Friday,	71	NE	"	73	NE	"	71	NE	Clear
16. Saturday,	71	NNE	"	73	"	"	71	NNE	"
17. Sunday,	72	SW	"	75	SW	"	73	SW	"
18. Monday,	73	NE	"	76	NE	"	75	NE	Cl'dy
19. Tuesday,	74	E	"	76	E	"	75	E	Clear
20. Wednesday,	77	E	Cl'dy.	75	SE	Cl'dy.	74	SE	Cl'dy
21. Thursday,	74	W	Rain,	75	W	Rain,	75	W	Rain
22. Friday,	69	NE	Clear,	71	NE	Clear,	73	NE	Clear
23. Saturday,	72	"	"	75	"	"	76	"	"
24. Sunday,	73	"	"	74	"	"	75	"	"
25. Monday,	74	"	"	77	"	"	76	"	"
26. Tuesday,	77	SW	Cl'dy.	78	SW	Cl'dy.	75	SW	Rain
27. Wednesday,	65	NE	Clear,	70	NE	Clear,	72	N	Clear
28. Thursday,	67	N	"	72	W	"	75	W	"
29. Friday,	71	W	"	69	NW	"	67	N	Clear
30. Saturday,	64	N	"	65	N	Clear	65	"	"
31. Sunday,	62	N	"	63	"	"	63	"	"

NOVEMBER, 1824.

DAYS.	9 *o'clock.*			12 *o'clock.*			3 *o'clock.*		
	Ther.	Wind.	Wea.	Ther.	Wind.	Wea.	Ther.	Wind.	Wea
1. Monday,	60	NE	Clear,	65	NE	Clear,	66	NE.	Clear
2. Tuesday,	62	NW	"	67	NW	"	66	SW	"
3. Wednesday,	63	W	"	65	NE	"	66	NE	"
4. Thursday,	65	"	"	70	"	"	67	"	"
5. Friday,	70	SW	"	73	SW	"	70	W	"
6. Saturday,	66	NW	"	73	NW	"	70	NW	"
7. Sunday,	64	N	"	70	N	"	70	N	"
8. Monday,	63	"	"	76	NE	Cl'dy,	65	NE	Cl'dy
9. Tuesday,	68	SW	Cl'dy,	79	"	"	71	SE	Rain,
10. Wednesday,	66	N	Rain,	66	N	Rain,	65	N	"
11. Thursday,	62	W	Rain,	60	NE	Cl'dy,	58	NE	Rain,
12. Friday,	57	"	Clear,	62	"	Clear,	60	NE	Clear
13. Saturday,	56	"	"	62	"	"	64	"	"
14. Sunday,	60	E	Cl'dy,	65	E	"	64	E	"
15. Monday,	63	"	Rain,	66	S	Rain,	67	S	Rain,
16. Tuesday,	67	SW	"	67	SW	Cl'dy,	65	NW	"
17. Wednesday,	63	NW	Cl'dy.	63	NW	"	65	"	Cl'dy
18. Thursday,	59	NE	"	58	NE	"	55	NE	"
19. Friday,	51	N	Rain,	50	N	Rain,	50	N	Rain,
20. Saturday,	49	"	Rain,	51	N	Cl'dy,	55	"	Clear
21. Sunday,	50	"	Clear,	52	"	Clear,	53	"	"
22. Monday,	53	NE	"	57	NE	"	55	NE	"
23. Tuesday,	56	"	"	57	"	"	56	"	"
24. Wednesday,	58	"	"	63	"	"	64	"	"
25. Thursday,	59	NW	"	64	NW	"	64	"	"
26. Friday,	60	NE	Cl'dy.	63	NE	"	65	"	"
27. Saturday,	67	SW	Clear,	75	SW	"	74	SW	"
28. Sunday,	70	SW	"	72	"	"	71	"	"
29. Monday,	63	N	Cl'dy.	63	N	"	60	N	"
30. Tuesday,	62	NE	"	65	NE	"	63	N	"

The Spring of 1824 was uncommonly hot—many persons were sun struck. As many as seven sudden deaths happened in one week. Cholera Infantum was very prevalent, and many children died of it. The atmosphere was close and dense throughout the Summer, in so much that at times the lungs appeared as if they were partially collapsed. Thunder and lightening occurred only once or twice, and then was very slight. The bilious fever among the inhabitants when it did occur, was very violent in its type.

There was a severe storm about the Equinox, through the southern portion of the State, of which we experienced but a small part. The country around was this Summer unusually healthy.

At the termination of the yellow fever, catarrhal fevers, sore throat, &c. supervened.

ART. II.

ESSAY ON WINE.

Read by appointment before the Medical Society of South-Carolina: by WILLIAM MICHEL, *M. D.*

WINE is properly speaking, the result of the fermentation of the must of grapes, which according to the alcohol it contains, possesses the property of inebriating, when taken in quantities more or less great. Most Chymists give the same name to beer, cyder, perry, &c.; but the qualities of these drinks are so much inferior to those of the first, that I shall not enter into any particulars respecting them.

It is not exactly ascertained at what period wine was first discovered; some authors think it was known before the deluge, others, that it was not used until after that epoch, as if heaven had bestowed it on man to console him under his misery, and procure oblivion of the awful overthrow of nature.

They generally agree however, that Noah was the first cultivator of the vine: this is certain, that the knowledge of this beverage is very ancient. In the earliest records of history,

wine is mentioned; and so highly esteemed, that it was not only used in libations to the Gods of the Heathens; but formed part of the religious ceremonies of the Jews.

It also appears from the following lines of Homer,

"The groaning presses foam with floods of wine."

And again,

"Late from the mellowing cask restored to light
"By ten long years refined and rosy bright,"

that the ancients had correct ideas of its preparation, and of its various qualities and virtues. The Gods of Mythology are represented to us as feeding on Ambrosia,* and quaffing Nectar. And in later days Camoens, the pride and boast of Portugal, in his beautiful and impassioned description of the Isle of Venus, gives wine the same appellation.

"In chrystal halls the feasts divine prolong,
"With wine nectareous and immortal song."

Dioscorides, the Physician of Anthony and Cleopatra, speaks of the Cœcubum dulce; and the Surrenthinum austerum.—Pliny mentions two kinds of wine the growth of Alba, the one sweet, the other sour; the celebrated Falernian wine was also of two sorts, and Virgil in this passage of his Æneis

——————— Ille impiger hausit
Spumantem pateram *Liber* I.

informs us that the ancients were acquainted with sparkling wines.

Of all vegetable productions, none is more susceptible of the various causes that influence them than the vine; thus we not only see climates modifying its produce, but the quality of the earth, and the difference of exposition, contributing in a surprising manner to this modification; so much so, that in Burgundy, Champagne and Guienne there are adjacent vineyards where the vine is of the same kind, planted and cultivated in the same manner, yet differing materially: this must proceed from the soil not being altogether the same or from a little difference in the exposition. If we were to judge of the vine from its vegetation or its fruit, this would scarcely be observable; our senses could only discover a shade of difference; but, as we only make those distinctions,

* There is a marine plant which Botanists denominate Ambrosia on account of its vinous odour.

by comparing wines, they must be more or less perceptible as our taste is more or less practised.

The fragrance of the grape, as well as its sugary particles, is the produce of an ardent and constant sun: the sharp and sour juice contained in the fruit at its first formation, cannot be sufficiently elaborated in very cold climates; for its primitive viridity still exists. when the approach of winter congeals the organs of maturation.

It is between the 40 and 50 degs. of north latitude that this favorite plant of Bacchus may be cultivated to the best advantage. Thus situated, are the noted vineyards of Spain, Portugal, France, Austria, Hungary, Transylvania, and a part of Greece. Out of the above latitudes, this plant requires much care, or it entirely degenerates.

In temperate climates alone, good wine is to be found: A calcareous soil is best suited for the grape, particularly if entirely exposed to the morning and midday sun, accessible to the air, and gently sloped; thereby justifying the idea of the Mantuan Swain.

Denique apertos
Bacchus amat colles.

Light arid ground is most congenial to the vine, the rain easily penetrates it, and the many ramifications of the roots are impregnated at every pore; indeed, an arid soil appears exclusively destined for this plant; as many spots where it grows luxuriantly, are unfit for every other culture.

Volcanized earth also produces delicious wines. Tokay, and the best wines of Italy are the product of volcanic soils. The lava at the foot of mount Vesuvius, rears the far famed Lacryma Christi.

We may conclude from what has been said, that there are particular wines whose qualities can only be produced in certain countries, and as warm climates encourage the fermentation of the sugary particles, the wines there ought to be more sprightly and generous, because sugar is necessary to the formation of alcohol. In cold climates the wines are very weak, aqueous and difficult to preserve, as they soon become thick and sour.

Of the must of grapes, and the general rules to be followed in the preparation of Wine.

It is from the fermented must of the grape that we derive the liquor of which we treat, thus it appears to me indispen-

sable to enumerate the various parts of its composition, before I proceed to the manner of preparing it. The must of the grape contains a great deal of water, a considerable quantity of sugar, a certain substance very soluble in water, and a small quantity of mucilage, tartrites of lime, muriat, and sulphat of potash. According to the French chymist Thenard. the must, when deprived of the contact of the air, cannot ferment, but it immediately acquires that power, on being exposed to it. This author says it is probable that the unknown substance then absorbs the oxygen, and transforms it into ferment.

The art of wine making varies in different vineyards, although it is subjected to general rules from which we should never deviate, and which I shall cite.

When the grapes are ripe, they are gathered and put into casks where they are stamped, then thrown into large wooden or stone vats exposed to the atmosphere, the temperature of which is near the time of vintage in Europe, about 10 or 12 degs. of Reaumur's (30 or 36 of Fahrenheit's) Thermometer, the fermentation takes place gradually, and encreases until the 4th or 5th day, when it becomes very active; the vat is visibly heated, and the great quantity of carbonic acid gas which evaporates occasions so violent an ebullition as to raise all the solid parts to the surface; the liquor loses its sweet flavour, becomes vinous, is strongly coloured, (if the grapes are dark) and here and there covered with foam; about the seventh day, all the signs of fermentation greatly diminish, when the vat is trodden either with a trough, or by a man, so as to mix the materials and revive the fermentation; when the liquor no longer ferments, takes a strong and vinous savour, and becomes tolerably clear; which is about the 10th or 13th day, the wine is considered as made, and is drawn off.

The fermentation however is far from being at an end as it slightly continues in the cask for several months; it is even so active for the first few days as to form a thick froth about the bung. The foam lasts as long as the fermentation continues, but instead of remaining on the surface it precipitates itself to the bottom, carrying a certain quantity of colouring substance mixed with tartar which although difficult to be dissolved in water, can easily be separated from it by alcohol, it is this medley that constitutes the dregs.

In the preparation of sparkling wines the fermentation is

not conducted exactly in the same manner. The liquor is bottled soon after it is drawn from the vat, and as at that time the fermentation is not completed there still exists much carbonic acid, the evaporation of which being not able to take place on account of the pressure to which it is subjected, remains in dissolution in the liquor, and makes it sparkle and foam when brought in contact with the air.

Wines of this sort are principally made in Champagne, the bottles must be carefully reversed, and occasionally uncorked during the first months to extract the lees that collects in their necks.

There are qualities of wine that cannot be obtained from grapes gathered at the time I have specified, it is for this reason that in the Islands of Candia and Cyprus they are suffered to dry before they are cut; and in Spain, Italy and elsewhere, some grapes are left to wither for the purpose of concentrating the saccharine particles out of which the luscious wines are made; in fine the preparation of wine differs according to its kind.

I should enter into superfluous details were I to dwell longer on this subject.

Wines are red or white. The former proceed from dark, and the latter from white grapes; but either, when analyzed, renders the same principles although in different quantities.

From all wines are extracted water, alcohol, mucilage, tannin, tartar, tartrites of lime, acetic acid, and some times other salts, such as muriat, and sulphat of potash, a blue colouring substance, which becomes red when united to acids and a yellow colouring matter.

It is from alcohol that wines derive their inebriating qualities, the greater the quantity they contain the more generous they are. The mucilage endows them with no remarkable virtue, perhaps they are sometimes rendered viscous by it.

From the tannin they receive a certain asperity, to the tartar and acetic acid they owe their tartness; it is for this reason that there is so great a difference between old and new wines; the former not only acquire superiority from age on account of the modification of their combined principles; but also from the settling of the tartar. As to the other salts they appear to have no material effect.

Let us not however conclude from what I have said that the strongest wines are the best; for the finest of Burgundy scarcely contain more alcohol than the common wines of

Europe, and less than those of the south of France; but the different qualities of each are well known, and as this difference cannot be attributed to the mucilage or the tannin, we must search for it in a body that has as yet escaped our observation, which forms the fragrance of the wine and which some Chymists attribute to an oil not yet separated.

According to the integral principles of wines, I shall rank them under five grand classes, as follows:

1st. Vina subacida et spirituosa, in which alcohol and acetic acid are in greater proportion, as those of Burgundy and southern Champagne.

2d. Saccharo aspersa et amara. In this class are ranged the wines in which the sugary particles and a certain bitter principle predominate, such as those of Spain, Italy and other southern countries.

3d. Extracto tartarica. To this division belong the wines of Bordeaux, Pontac and Grave, in which tartar and the extracted principle abound.

4th. Tartarica et acidula. This class comprises the wines of the Rhine, Maine, Moselle, and all those of the north of Europe in which a little tartar, and a great quantity of acetic acid predominate.

5th. Gazo mucosa. In this class are ranked the sparkling wines where we find the carbonic acid which is detained by a sweet mucilaginous substance.

Effects of Wine on the animal economy, when taken moderately and immoderately.

Wine has become one of the most ordinary drinks of man as it is the most varied, besides being a tonic, it is also nutritive, and this undoubted property was well known to the father of medicine, who says in one of his aphorisms,

Famem vini potio solvit.

Zimmermann thinks that all wines are to a man in health the counterpoison of meat, as their acid prevents the volatile alkali from developing as much as it would with water; and I am inclined to this opinion in preference to Wilson Philips', who in his treatise on indigestion asserts that water is the proper fluid for diluting our food It is not only on the digestive system that wine has an influence, it extends also to the circulation, the pulse becomes full, frequent and strong, the blood flows into the capillaries (this is indicated by the flushing of the face) the respiration

becomes much accelerated, and the nutrition more active.

Wine was considered by the ancients as a fortifier of the intellect, and a fertilizer of genius.

Vinum facit ingenium,
dat animos, ... says *Ovid*:

It gives heat and strength, excites courage and gaiety, animates and hightens poetic enthusiasm; and it was probably under its influence that Horace celebrated it in many parts of his elegant works.

Wine drank merely to excite gaiety procures oblivion of care and pain, by it the hypochondriac is enlivened, the aged feels young, the taciturn becomes talkative, the miser knows a moment of generosity, the misanthrope is sociable, and the coward bold.

Vina parant animum veneri.

According to Cabanis by the habitual cheerfulness it occasions, the lively excitement of the cerebrum and the increase of the muscular force; the use of wine nurtures vivacity, keeps the mind in constant activity, gives birth to, and developes benevolent propensities, such as confidence and cordiality.

In countries where the vine is cultivated men are generally more cheerful, witty and sociable, and their manners more frank; their quarrels are characterized by sudden violence, but their resentments have no duration, their vengeance nothing dark or perfidious, in a word, I think good wine an agreeable and salutary drink when it is used with moderation. However the effects of wine are various according to different constitutions: some men drink it habitually, even in great quantities, without feeling the least inconvenience, or without being afflicted in after life with any incidental malady, while with others it evidently disagrees, a very little occasioning inebriation and other evils.

We may be certain that wine is pernicious, and that its use should be interdicted, when a small quantity produces a vinous breath, sour eructations and a slight head-ache, and when drank in an unusual quantity, it occasions giddiness, nausea and intoxication, particularly if this intoxication is melancholy, sombre, querulous, or inclines to ferocity.—Men on whom it has such effects, and who persist in its use die miserably ere they reach fifty.

Although the ordinary use of wine taken moderately may be salutary to aged persons, who Celsus recommends to use it without water before breakfast, and after meals, to strengthen the digestive powers and sustain the contractile energy of the muscular system, although those who toil at hard and painful trades use it with advantage to increase the extraordinary corporal force they are often obliged to exert; although the inactive life led by certain artisans admits its use to prevent the inertia often occasioned by sedentary occupations; I believe that whoever has made water his usual drink, and has enjoyed perfect health, would be most blameable on any pretext, for endeavouring to habituate himself to wine; because we have many examples of vigorous men who have reached extreme old age, and whose ordinary drink had been water.

Water does not extinguish genius, says Zimmermann.—Demosthenes, who Longinus compares to thunder, or a tempest, drank nothing but water; it appears that it was also Cæsars beverage. Locke and Haller used only water, as did many other great men that I could mention.

I not only blame those persons who having a natural dislike to wine endeavour to overcome their aversion so as to accustom themselves to it; but I would even forbid its use to most women and children, as well as to some men whose irritability would render it very detrimental, particularly if not tempered by water.

If to the happy effects of wine when taken moderately, we compare those of the immoderate use of it; what a dreadful contrast! The man enslaved by this shameful vice is in the worst kind of bondage, he abandons himself to every excess, he violates decorum and modesty, and his mind is as a soil already prepared in which every vile propensity may take root, flourish and bring forth fruit in abundance. He yields to his irregular desires until they have nothing more to demand, and becoming foolish, as well as vicious, he can no more keep a secret than he can retain the viands and liquors with which he is surcharged. Each day he plunges deeper in the most disgraceful crapulance, and ends by becoming a brute and an object of scorn, mockery, and disgust to humanity. Happy is the community who beholds this frightful picture, confined to men without power or rank.

After having considered the moral state of a drunkard, let us observe his physical appearance. His eyes are sunk,

spiritless and sombre, his cheeks pale and flabby, or his face is red and full of pimples, his eyes fixed, haggard and injected with blood, his limbs can scarcely support the weight of his body, and tremble under its burden, his sleep is agitated and restless, or profound as death.

Wine taken immoderately says Zimmermann, is to youth what manure is to trees; it hastens the growth of the fruit but makes the tree perish; so wine in this case acts like poison, it attacks the vital principles of man, destroys the strength of his body, and prostrates every faculty of his mind; causes vomiting, fever, anger, frenzy, convulsions, apoplexy, and sometimes death. Wine in general enervates the body by degrees if it is habitually taken to excess, and produces dropsy, but its most ordinary consequence is, a disposition to all inflammatory, maladies, such as gout, asthma and apoplexy. But for it to have such effects, for wine to brutalize both the physical and moral powers, its abuse must be carried to the last degree, and it requires the aid of ardent spirits to which the most abject class of drunkards resort, when wine no longer has any influence on their palate or cerebrum.

On the use of Wine as a Medicine.

After having glanced rapidly over the history of wine, its preparation and its chymical analysis, after having considered its general effects on our animal economy, I have finally reached the point which must be the most interesting to every Physician, who following the example of the greatest masters of the healing art, like to employ in every disease simple medicines of which he knows the composition and effect, thus following as nearly as possible the much recommended system of the great Hippocrates.

Of all tonics wine is the most powerful for persons who do not make an habitual use of it, or who use it with moderation, it can be given unadulterated in some cases as a potion, and in others it is of great utility when mixed with water.

There are divers cases where success may be expected from its administration.

In the decline of inflammatory fever, when weakness is obvious, and all symptoms of inflammation have subsided, it should be preferred to any other cordial, because it is the most agreeable as well as efficacious. Good old Burgundy, slightly tempered by water would be very useful in this case.

What happy effects has it not produced as a tonic in gastric fevers, particularly when they are intermittent, and have resisted the general remedies. Generous wine combined with bark, rarely fails of effecting the end proposed, if it be seasonably administered.

What advantages may we not expect from it in the febris pituitosa, where the fever does not attack with the the same violence as in the inflammatory; and among whose numerous predisposing causes we may rank the privation of wine, particularly if the invalid had been accustomed to its use.

In the Typhus, or Febris pestilentialis continua of Sydenham, whatsoever may be its exciting causes, the administration of wine is always proper. Should this fever originate in an anatomical hall, a prison a barrack &c. &c. on its slightest warning, a few glasses of wine or a small quantity of liquor should be drank.

It is in the second period of this dreadful malady, when the symptoms arrive at the highest degree of intensity that it is necessary to use a vinous beverage and even wine at intervals, when prostrated strength, sombre delirium and fœces of a very dark colour, alarm the attentive Physician.

I can assert, says the celebrated nosologist Pinel, that I have cured strongly characterized putrid fevers, by draughts of wine and a vinous beverage, intermixing evacuants at intervals: it was even wine of the south of France, in which the Tartarous principle could have produced no sensible effect.

In the Typhus of Cullen, or Febris Nervosa of Frank, wine, is of the greatest utility, it is a tonic on which the Physician can most depend; the prostration of strength even in the commencement of the disorder sufficiently indicates the necessity of resorting to frequent potions of generous wine, such as Bordeaux; Malaga, Madeira, Constantia.

In a fever of that nature contracted in 1793 by M. Pinel, in attending on the prisoners of L'hopital de Bicetre; he says that he escaped death by plying himself with good old wine.

In slow nervous fevers, says Huxham, the patient should have free access to light wine, and as the fevers are generally of very long duration, it is necessary to support the patient, that he may not sink under their violence. Red wine is the best to effect this purpose, I place it before any other cordial sanctioned by our art.

In the Angina gangrœnosa, where prostration of strengh

is generally considerable, a combination of wine and bark is also successfully administered.

In the plague of Nimeguen, Diemerbroek occasionally made use of a light wine, not so as to intoxicate, but to create a jovial humour.

What Physician is ignorant that the famous Des Genettes, during the pest in Egypt, escaped this horrible scourge as much by the use of spirits, as by his heroic courage.

The immortal Sydenham affirms, that he administered the wines of Spain to some hysterical ladies with success, the quantity being a large glassfull at bed time, continuing it for several days.

M. Bosguillon, thinks that wine taken in small quantities is rarely prejudicial in the gout, except it be sour, as there are persons to whom a glass of acid wine, recalls this malady. Zimmermann, recommends champagne to gouty persons, from its having been observed that this disease scarcely ever occurs in that province.

In the treatment of the Rachitis where wine generally forms the basis, I have seen it recommended often enough by eminent Physicians, to make me presume that they considered it all powerful in that affection.

We find it of the greatest use in passive hœmorrhages particularly those which occur after labour by inertia of the uterus; and several modern authors recommend it to be injected into this organ.

Various other diseases may claim the use of wine, but it demands given circumstances which it would be too tedious to enumerate, and in fact there is scarcely a Physician who does not frequently employ it either as a principal or an accessory remedy.

In some cases of vesania, in chronic diarrheas, great colliquative sweats, hœmmorrhages and a great number of surgical cases, wine is precious as a medicine.

After all the facts that I have mentioned, unless there be contrary indications, we must follow the advice of Brown who says, Physicians had better prescribe to their patients good wine, which is at once a tonic and an agreeable remedy, than powders, extracts and tinctures.

Wine is also employed as a vehicle or excipient in the preparation of very many pharmacentical compounds. The Vina Medicata, are daily used with advantage. The products of decomposed wine, are of the greatest utility in medi-

cine. Vinegar is used in various preparations. From the tartar when combined with antimony and potash, is obtained tartaric acid, one of our most useful remedies; and lastly alcohol the produce of the distillation of wine is frequently and usefully employed when united to acids in the formation of others.

I shall not speak of all those compounds each furnishing in itself an interesting subject for dissertation; and shall also designedly omit to mention the sophistication to which the enticement of gain subjects different kinds of wine, leaving to others to enlarge on the few hints I have thrown together.

ART. III.

Observations principally on the acute form of Cholera Infantum, read before the Medical Society of South-Carolina, by J. M. DILL, *M. D.*

"Surely every medicine is an innovation, and he that will not apply new remedies must expect new diseases."—*Bacon's Essays.*

The diseases of children, chiefly occupy the care and attention of the Physician. Among them, from the tenor and violence of its attack, the stubborness and awful power of its progress, and the frequent fatality of its termination none take a more important place than the Cholera Infantum.

I would confine my observations on this disease to the acute state principally. Where it is attended with copious vomiting and purging, or purging occasionally alternating with vomiting, when it is unaccompanied with symptomatic organic disease, or dangerous chronic determinations to the head, resembling if not really constituting Hydrocephalus, or when it terminates in a regular remittent fever, as it usually does, and which I believe to be identified with the Febris Infantum Remittens. The propriety of the name of this disease I must here question, though it may be thought cavalling to object to it, as it is used by the authority of Rush, Miller, Chapman, Hosack, Caldwell and other practitioners who have severally made it the subject of their inquiries, and is in respectable and common usage. Notwith-

standing, I am sure this term is so contrary to the principles of a correct nosology, that some weight must be allowed to the following considerations against its employment

1st. If this disease really differs from the Cholera of Adults, it should be denominated differently, for by applying the same name to several things, we confound them, and give rise to a perplexity, which definite terms would avoid.

2d. The first state of this complaint, is the same as the Cholera of Adults, except the affection of the head, which generally occurs, however this state does not appear to deserve a different term. When the complaint is of long standing, the symptoms differ in toto from the Cholera, and I think requires to be differently denominated, if this latter state is a peculiar disease. But should there be nothing peculiar in this termination, should it put on symptoms exactly resembling a disease already often described, then it certainly requires no new term, and should be known by the same term as serves to denominate such disease. The examples against using the same term to denote a disease and its termination, when such terminations are described as distinct diseases, and have received appropriate names, are too numerous to need enumeration. An enlarged liver may occasion dropsy, should I call this disease liver complaint, it would excite laughter; yet it does seem to me quite as improper that a disease which has terminated in a remittent fever, an enlarged liver, and a diseased dropsical train should be called Cholera, when the disease thus termed is attended with a group of symptoms widely different from those just mentioned, as often characterizing the termination of Infantile Cholera.

3d. That the chronic state of this complaint or rather its termination, is a disease which has been often described, I hope the quotations and references following will establish.

Rush's account of this disease has been supposed so perfect that it is always referred to by all writers on this disease in this country. His history of the latter state is as follows:— "The children in this state of the disorder, appear to suffer a good deal of pain, they draw up their feet, and are never easy in one posture. The pulse is quick and weak. The head is unusually warm, while the extremities retain their naural heat, or incline to be cold. The fever is of the remitting kind, and discovers evident exacerbations especially in the evening. The disease effects the head so much as in

some instances to produce not only symptoms of delirium, but mania, in so much that children throw their heads backwards and forwards, and sometimes make attempts to scratch or bite their parents and nurses. A swelling frequently occurs in the abdomen, and in the face and limbs.—The eyes appear languid and hollow, and the children generally sleep with them half closed, such is the insensibility in some instances of this disorder that flies have been seen to alight upon the eyes when opened without exciting a motion of the eyelids to remove them."

Now let us compare this account of the Infantile Cholera, with Ayres history of Marasmus, by which term, he denotes the disease usually called Infantile Remittent Fever. It is as follows:—It is divided into acute and chronic, the acute readily passes into the chronic form and vice versa. In Chronic Marasmus, the patient is languid, drowsy and morose, the appetite is diminished or depraved, the bowels are extremely irregular, being either torpid or afflicted with dianhea and the evacuations have an unnatural color, or odour. There is generally a distention of the abdomen, and some pain at the Epigastrium, the sleep is disturbed, or unrefreshing, night sweats generally attend. The face is pallid, the features heavy and inexpressive, and the whole skin has a pasty, sallow appearance. After these symptoms have continued a longer or shorter time, first febricula, and then fever, distinctly come on, and now the acute form may be said to commence. At first there are evening exacerbations with complete remissions, during the fore part of the day; but in the course of the disease the remissions become more irregular and imperfect, the paroxysms are more severe, and are attended with delirium, and other marks of determination to the head, threatening cerebral effusion." The symptoms of this disease, resembling Hydrocephalus so very closely, he proceeds to consider the diagnosis between them.

The account given by Pemberton of the Infantile Remittent, resembles this disease equally, if not more closely; he notices the similarity between it and Hydrocephalus, and gives the diagnosis. The same resemblance in these diseases to the Infantile Cholera are to be found in several authors who wrote expressly on the subject, and in systematic accounts of them; but to pursue the subject any further, I conceive to be unnecessary as the facts before us are quite sufficient to establish the position for which I contend.

Now I ask whether the close resemblence of the infantile remittent, as quoted from Dr. Rush, does not immediately strike every one. Are not the leading symptoms, I may say the characteristics of this disease the same? Is there not the purging or diarrhea, the remittent fever, and the same affection of the head? Does not the last mentioned symptom so resemble Hydrocephalus, that we find the same difficulty in making a diagnosis betwixt it and Hydrocephalus, as the practitioners of Great Britain do between the latter disease and marasmus, or the infantile remittent? From what has been asserted, the proofs appear so very strong to my mind, that the chronic state of Infantile Cholera, and the Infantile Remittent are the same disease, that I hardly entertain a doubt, but that this opinion will in time become general.

The writers of our own country on this disease, have been astonished that it was not mentioned by foreign Authors; but this is easily accounted for, when they look for the description of it, under the name they have given it themselves, which differs from that it has received abroad. I must here notice, what affords the position I have taken no little additional force, a similar observation made by one of the Editors of the Edinburgh Medical and Surgical Journal, No 3, new series in his Review of Ayre, on Marasmus, in which is noticed a similar error and confession, arising from the different names employed by several writers to denote the Infantile Remittent: it is as follows. "The disease here treated of, under the name of marasmus, has received different appellations from different writers, it is the worm fever of popular phraseology; the Febris Lenta Infantum, of Hoffman; the Hectica Infantile of Sauvage, and the Infantile Remittent Fever of Batton, and other modern Physicians."

I shall now proceed to describe the period or season in which this complaint prevails. It appears sooner or later in the year according to latitude; occurring earlier in warm climates, and later in cold. In Charleston it generally commences in April and May, and continues during the summer, and autumnal months. Dr. Rush remarked that it had the name of April and May complaint in South-Carolina; but in this place, at the present time, it would scarcely be known by that term. In Pennsylvania it appears in June and July, Sydenham says the Cholera of Adults occurred in England towards the end of Summer, and beginning of autumn, and was as regular in its appearnace as Swallows in

Spring, and Cuckoos in midsummer. He also remarks that there is a Cholera occurring at any season of the year arising from a surfeit. This observation is still more applicable to children from their greater irritability of system, and especially to those, who have recently suffered from the Summer complaint, and thence made very irritable. This disease occurs several weeks sooner in children than adults. It is said to be milder by some writers, with what degree of justice I am not prepared to determine, for as I before remarked it frequently terminated in other diseases that too often baffle the resources of our professional skill.

The *Remote* or *Predisposing* causes of this complaint appear to be derived from the debilitating effects of a warm season and impure atmosphere. This is rendered probable as children seldom have a very violent or dangerous attack of this disease after the second year, when their excessive irritability of system is lost from the habit of exposure to these causes. I am not prepared to assert whether many who have this complaint would not have passed through the season with exemption from it, had not other debilitating causes given them activity and efficiency ; although I must incline to the opinion that the fact is probable.

The *Exciting causes* are worms, Summer fruit, any food excessive in quantity, or of very stimulating qualities, as several kinds of fish, particularly shell fish ; indigested aliment, morbid acidity or an exuberant secretion of bile, or in fact any irritation in the alimentary canal, or in any parts whose sympathies with it are immediate and strong, as the irritation of teething, &c. &c. Changes in the weather from heat to cold, and from dryness to humidity and improprieties in articles of clothing.

Dr. Rush, has objected to several of the causes of this complaint, which have been enumerated, on which I shall make a few observations, in the order they occur in his essay on this subject.

Dentition, he does not think a cause of it, because it only occurs at one season of the year, but he acknowledges it aggravates the disorder, and says about the tenth month, when most teeth make their appearance he has observed that more children die of the complaint than those at any other.

Now when the force of a disease appears to be controuled in so important a way by any circumstance, we should long hesitate before we deny it the agency of a cause. Moreover

we must all acknowledge that ordinary Cholera does occur at other seasons during dentition; and is this not readily accounted for from the influence of nervous communication, through the medium of the par vagum? Indeed it is a matter of common observation that the irritation of teething is productive of many alimentary complaints; and who is ignorant of or has not seen the effects of scarifying the gums in relieving them? Now when we observe the effects or rather disease of dentition, and their remedies, I cannot conceive how it is possible to deny it some agency in the production of the disease in question; and when cooperating with the powerfully debilitating effects of an impure atmosphere and warm season, it seems but a fair deduction that great irritation of the alimentary canal will be induced, productive of Diarrhea, Cholera and Fevers.

May 1819, I was called to the child of Mr. B —, aged 14 months, it was a case of the rapid progress of dentition, several teeth were making their appearance cotemporaneously; much irritability of the general system attended, and was followed by fever, vomiting and purging. I gave an emetic, several purgatives and laxative medicines occasionally without much benefit. From this failure I was induced to examine the gums and found them hot and swollen, and I therefore requested permission to scarify; the mother had imbibed some unfavorable and wrong impressions of this practice which I could not then prevail upon her to give up. I continued to attend the child a week longer, during which period it was evidently growing much worse. Finding this the case I remonstrated earnestly with the parents of my little patient, and stated positively that I would not have the responsibility of its present situation upon me unless I was allowed to put in practice any mode of treatment my judgment dictated. I therefore insisted on their calling another Physician, or allowing me to scarify the gums of the child, who I was confident would be much benefited by it, they consented; it was done. During the morning the child would not move its head from the pillow, without being urged to it, was languid, drowsy, spiritless and feverish; in the afternoon about four hours after the gums were lanced, I had the pleasure of witnessing an entire change in its condition, it was sprightly and playfully moving about the room as well as its enfeebled powers would permit. It continued to improve very fast, when neglect in attending to its diet (being

allowed to eat several figs) brought on a vomiting succeeded by purging, that was fast reducing it to its former situation. After giving evacuating and tonic medicines for some time without much benefit, I was induced to examine the gums again, and found those of the lower caspiate considerably swelled and inflamed. I immediately lanced them; the effect was as strikingly beneficial as before, and the child by the use of occasional antacid laxatives, bitter infusions, and very small doses of calomel, in the course of three weeks regained its health.

A case of the same nature will be found in the Edinburgh Medical and Surgical Journal where the effects of dentition, and the efficacy of scarifying the gums were as striking as in that just related. However such cases must be familiar to every practitioner, and it is therefore needless to accumulate them. I should not thus long have dwelt upon the subject, had I not early imbibed the idea from the essay of Dr. Rush that dentition was not a cause of this complaint, and was thereby led to overlook it in practice; the small experience I have had however, convinces me of the error of that opinion, and I cannot hesitate to think that teething is frequently an exciting cause of this complaint; while on the other hand I allow there appears no ground for a difference of opinion as to the seasons giving the predisposition to it.

Of worms as a cause of Cholera, Dr. Rush has delivered the same opinion to which I would oppose the same arguments as were offered against his objection to dentition, and in addition I will add that I have three times seen a lumbricus in the stomach occasion great irritation of it, so much so that nothing could be kept on it which has entirely subsided after it was puked up. Purging we know is an ordinary symptom of worms. Thence does it not show a little captiousness in our judgements in not admitting that worms may be an exciting cause of this disease, when acting on a system predisposed to it by the influence of the season, while we observe under common circumstances that the most prominent, or leading symptoms of it, are produced by them.

Of Summer fruit Dr. Rush says I object also to considering them as a cause of this complaint. for children who eat much more fruit in the country are healthy; but does this prove they will not hurt children in a city A country woman is robust and healthy, she eats a basin of sour milk and

bread for breakfast—does this prove it a good one for the luxurious and inactive town lady A highlander of Scotland will make his breakfast, dinner and supper of onions, cheese, and hard oatmeal cake; he is more vigorous and hardy than any of us; thence is it proper we should live as he does? no. Our habits require a difference: so it is with children in town and those in the country. Those in the country who take much exercise in the pure and open air are consequently strong & healthy: but the reverse is with those in town who live generally in confined places, breath an impure air, take little exercise, & are weak and delicate. But the Doctor though he objects in the beginning of the paragraph to the opinion that Summer fruit produces this disease, concludes it with the observation that the moderate use of ripe fruit rather tends to prevent than induce it. If the observation first made applied to the moderate use of ripe fruit. I believe any one would readily concur that they must be, if thus used, innoxious, though I cannot think beneficial. However I ought to conclude it was meant in a more extended sense as the argument is that children who eat most fruit are most healthy.

My reasons for not thinking them beneficial are derived from the following considerations. Children are very fond of fruit, and very apt to take more than their weak stomachs are able to digest, and as this objection does not apply to other articles of food which are wholesome and nutritious, they in my opinion are preferable. The only advantage that Summer fruit have consists in the laxative quality they possess; however this advantage or rather effect may be more safely derived from articles of simple saccharine qualities, which would be free from the disadvantage attendant on their acetosity. My only motive in differing from Doctor R —, is the establishment of truth, at least I think it is not a disrespect for his memory, as no one can hold it in higher estimation than I do. Symptoms of this disease. It usually comes on with a recession of heat from the surface, chill, vomiting and purging. Sometimes it comes on with fever vomiting and purging; at times the purging preceeds the vomiting; the evacuations after the passage of indigestible or fœcal matter consist usually of bile, although often they are as limpid as water, presenting not the least tinge of it.—These symptoms continuing for sometime, the breathing becomes hurried and anxious, the pulse small, weak and frequent, great agitation of the muscular system attends, the

strength rapidly diminishes, the countenance is expressive of anxiety and dejection, drowsiness now often occurs, and there is considerable soreness of the abdomen, with violent convulsive action of the incumbent muscles. The strength continues more rapidly declining, great emaciation takes place, & faintings, the eyelids are closed, pupils much dilated, great drowsiness, the extremities become cool, convulsions, cold clammy perspiration breaks out over the whole surface, the features are pinched up (or Hippocratic) the pulse intermits, the respiration becomes more convulsive, painful and interrupted, and finally death in the short period of 36 or 24, nay even 4 hours shuts us out from this brief scene of terror and of suffering.

When the disease terminates in recovery, the irritability of the stomach subsides gradually and, the purging continues. This event is sometimes preceded, but always followed by fever; the vomiting or squeamishness of stomach occasionally returns, the fever remits or moderates in the morning, and is now violent, or exacerbates in the evening the patient is dull, fretful, and drowsy. This fever with purging or a torpid state of the bowels, continues with very different intervals, according to the strength of the patient, his peculiar situation, and the attendance, and care he receives, for three weeks or longer, when I would say it terminates in the remittent infantile fever, as then the symptoms of that disease, become strongly marked.

Pathology of this disease. It has been supposed to arise from an inversion of Bilious Fever, upon the bowels, such an explanation however appears to me quite unsatisfactory.—Fever marked by a concomitant affection of the Liver, is called bilious.

Now how this disease, that shows its principal force upon the stomach should be occasioned by that fever turned upon the bowels, seems neither very reasonable or intelligible.—Moreover, fever as usually defined often does not take place, but, till effected by well timed remedies, or the efforts of nature to relieve herself. Again, does it not seem improper to call a disease which affects only a part of the system, by the term fever, which we use to denote a disease affecting the whole system, in every part even the most remote and isolated. These differences between the two diseases, would seem surely sufficient to separate them as distinct and independent complaints. This opinion I apprehend, has taken

its origin from the two diseases, occurring in the same season and being produced by similar causes; such reasoning however, must be erroneous in the extreme, as from it we may deduce the most whimsical conclusions. In the winter, cold is productive of various local inflammations with fever, such as Rheumatism, Nephritis, Pleurisy, Dysentary, &c: Now here by a parity of logic, I may conclude that Nephritis &c. are inversions of Rheumatism, upon the individual organs affected in each of these complaints, or vice versa. Is there any Practical improvement gained by this opinion? if so I am ignorant of it? is there any illustration of the pathology? No. For the darkest clouds of perplexity, obscurity and ignorance shades the Ratio Symptomatum of fevers themselves. Centuries have rolled by us, and added nothing to our knowledge, they have only heaped theories upon theories; all of them equally deficient and inconsistent with facts. They have been ingeniously devised, and served to show that great minds may conceive, and support their sophisms, so plausibly as not only to deceive others, but themselves, and keep the world or the greater part of it, enslaved, and chained down to their delusion, and errors for some score of years. But they have been of no use in *Science*, unless to humble the pride of Philosophy, and teach her the utmost caution in her inferences from facts.

This notion of the disease appears to me to have originated from the illustrious Sydenham, whose words as Dr. Rush has clearly proved in his notes to it, tended much to support the doctrine of the unity of disease. This is one of the tendencies of that doctrine, which I believe is now nearly abandoned, with what degree of justice will appear to all, who reflect, on the present deficiency of our knowledge on many points of practice; whereas this doctrine if true, would leave us little wish in the Science of Medicine, industry would accomplish all, as all that could be wanted, would be attention to the seats and modifications of this unit, (Strange, and mysterious unit, which we divide and modify as we please;) and be ready with our stimulants, and sedatives as the System is depressed, or excited. But we have to deplore, that this happy period in our science has not yet arrived; that we see it, in its infancy only, opposed by more difficulties in its advances towards perfection, than any science which arrests the attention, or employs the energies of the human mind. Though if the apple shall fall, which in the reveries of some

great mind will lead to the explanation of a large range of facts in our science, we shall not with scepticism regret it, but thankfully and joyfully receive it; however on the other hand, let us not catch too eagerly at "sweeping generalizations," least we may find a shadow instead of substance, least we shall be hurried along by ingenious sophisms, instead of being conducted by the slow and faithful guidance of the spirit of Inductive Philosophy, unto the temple of nature and truth.

This complaint has been supposed to arise from an affection of the Liver. I am at a loss to conceive, what disease of that organ, could produce the symptoms of Cholera.—Neither in the acute or Chronic Hepatitis, or in any other affection of that viscus, as far as I am acquainted, are there like symptoms; in the passage of gall-stones, there is the greatest resemblance, but even here how widely separated are the two diseases. Is it supposed, that because the liver, is found enlarged, and of altered appearance upon dissection that this condition of that viscus must have occasioned it. If so we may prove upon the same ground that it is occasioned by Hydrocephalus, as the brain is frequently dropsical in the event of this complaint. In drunkards, do we not find the liver very much diseased, now who for a moment, will suppose that these symptoms are derived from original impressions on that organ, and will overlook the primary effects of alcohol on the stomach, none I am convinced would maintain such a paradox: and yet this seems quite as satisfactory to me as the opinion of an Hepatic origin to Cholera. In yellow fever, the same error existed as regarded its pathology, as I now apprehend, exists in the pathology of this disease: this fever was supposed bilious, and all the symptoms of irritation in the stomach, were attributed to sympathy with the liver, or the presence of acrid bile. What has dissection proved? that the liver is for the most part natural, while the whole force of the disease is spent on the stomach. A few dissections in subjects, where the liver was accidentally found diseas'd must have given rise to this error, and what might have tended to it, is that the organic affection of the stomach, is such as might have been easily overlooked. This I think has been the case with Cholera. It has been argued in favour of the origin of the disease, that as mercury is highly useful in it and injurious in complaints of the stomach, it proves the Hepatic origin of it: but I hope in another place to refute this

opinion by shewing that mercury is useful, both in acute and chronic diseases of the stomach, and that the contrary opinion has arisen from the difference in its mode of exhibition.

Cholera, has also been said to arise from the presence of acrimonious bile in the stomach. This opinion has been ably refuted by Dr. Caldwell, in his notes to Cullen, therefore I shall not myself notice it further, than to add that it does sometimes exist when there is no bile; now under these circumstances to suppose such a thing is being guilty of supposing an effect without a cause.

The doctrine of this disease, which I am most inclined to favour is, that it is an original disease of the stomach, as in yellow fever, I believe the sympathetic affection of the liver, has been mistaken, for the radical disease.

The following considerations have induced my conclusion.

1st. That affections of the stomach, are attended with symptoms like, and sometimes the same as Cholera. A large dose, or often, even a common dose of an emetic, will occasion vomiting and purging. Various poisons &c. &c. produce it; in these cases I conceive there is no doubt of the primary impression being made on the stomach.

2d. The sympathies of the stomach will account for the affection of the liver, brain, and other symptoms that take place in this disease; the proofs of such sympathies, would be only the enumeration of many, and well known facts and therefore unnecessary. In drunkards do we not find the viscera generally much diseased, these affections we must suppose arise from a primary impression made on the stomach.

3d. The difficulty of explaining its phenomena, while we suppose it to arise from the causes above mentioned; when the theory that it is a radical disease of the stomach, is an hypothesis, sufficient to account for its phenomena.

Before I proceed to the indications of cure, I must remark that my observations on the treatment, apply to the form of it above described only, and that I have carefully avoided extending them to the chronic state, or rather the termination of the disorder.

The indications of cure, it appears to me may with propriety be reduced under the four following heads.

1st. To remove irritations from the alimentary canal.

2d. To lesson irritability, and lesson Spasmodic action.

3d. To obviate, and remove inflammation.

4th. And last to correct the vitiated secretions of the chylopoetic viscera and restore tone, to the general system.

The indications to remove irritation from the stomach and bowels, is accomplished.

1st. By diluent and demulcent drinks taken in large quantities to encourage & provoke emesis, such as barley water, chicken broth, or any similar preparation. What appears to me, to answer better than any of them is toast water, besides that it is more convenient, being readily prepared: bread when much burnt is said to possess anti-emetic virtue.* Again we know that the *charcoal* from burning *cork* is a remedy for the cholera, high in popular estimation.

2d, Injections of these articles frequently repeated, or what I prefer Clysters of the mucilage of starch. Both diluents and clysters, appear to have been exhibited chiefly for the purpose of obtruding, *acrimonious* humours, the cause of the disease being supposed to be *acrimonious bile*. This treatment is as antient as Hippocrates. It is continued three or four hours, until sufficient evacuations are induced, and then followed up by the use of opiates combined with aromatics and carminatives. This management until a late period constituted the whole treatment of this disease. Sydenham says to expel the sharp humours which feed the disease, would be like an attempt to extinguish fire by oil, as the most lenient cathartics would increase the disturbance and raise new tumults. His method of procuring sufficient evacuations. is by the use of large draughts of diluent drinks, or thin mucilage continued three hours, during which he gives clysters of the same articles, after this an opiate or opiates several times repeated completes the cure. Cullen's experience and opinion go to establish the same practice, he says in the beginning of the disease the evacuation of the redundant bile is to be favoured by the plentiful exhibition of mild diluents, both given by the mouth, and injected by the Anus, and all evacuant medicines in either way are not only superfluous, but commonly hurtful.

3d. Emetics have been recommended in this complaint, in its early state, where there is reason to suppose that the *irritating cause* had not been removed from the stomach, by spontaneous vomiting. After the long sanction of experience, the venerable authority of the Father of Physic, and the posi-

* See Walkers notes to Sydenham, article Cholera.

tive & unqualified opinions of the two illustrious Physicians above mentioned against the use of even the mildest evacuants, I need not say that this practice, when necessary should be adopted most cautiously. I should presume it could never be used safely; while the convulsive action of the stomach and bowels is great; when the powers of life are much exhausted; or if their has been sufficient evacuation by spontaneous vomiting and purging; or if there is reason to suppose that these will be. Emetics hardly ever appear to be indicated until the violence of the complaint has nearly subsided. Several days after the attack, their use seems required, from the accumulation of indigested aliment, and vitiated secretions in the first passages, and are to be repeated pro re nata. Their utility it must be observed extends much beyond the simple evacuation of the bowels, as the impression made by them tends to restore the healthy action of the secretory powers upon which entirely depends the whole process of assimilation in all its gradations. I would not here lose sight of the agency of the vital powers, but simply express the fact, that the secretions are the means by which those powers effect their end. Again, they may be farther beneficial, by quieting any irregular spasmodic action which exists; for we are all acquainted with the pleasing calm they produce in many convulsive agitations arising from nervous diseases.

4th. Purges.—Calomel in the first stage of this disease while much irritability of the stomach and bowels exist, does seem to me to supersede the use of every other purgative. It operates on the whole tract of the alimentary canal, makes a powerful impression on the secreting actions of the digestive viscera, is retained better and operates as mildly as any cathartic whatever; not excepting the Oleum Ricini, which was it not nauseous would be still objectionable, as in its preparation, the juice of the rind of nuts, which is a very acrid poison, is sometimes extracted, and combined with this oil, and although in very small quantity renders it very nauseous and irritating.* It may require some proof that calomel is a mild purgative. Dr. Chapman, in his lectures, recommends it in preference to ol: Ricini, both in Gastritis and Enteritis. In yellow fever almost wherever it prevails, calomel is generally used as a cathartic. Here, there is the

* See Faithorn on its use in Chronic Liver complaint.

greatest, and intractable irritability of stomach, and a rapid tendency to its inflammation. Chisholm, of the West Indies, I believe first celebrated its virtues in this disease: he has spoken highly of its mildness and efficacy in inflammations; and says that in violent and malignant diseases, where we wish to reduce inflammation without impairing the general strength, mercury is the remedy to be selected; now although we will not go the whole length with him, yet it must be confessed, that such testimony, gives corroboration and adds weight to the opinion in question. Having thus given the authority I could recollect at the moment for the use of this remedy in diseases very nearly allied to Cholera; (I shall conclude my remarks on that article) merely observing that in the commencement of this complaint, where emetics appear to be required, that sufficient doses of calomel would seem altogether to supersede their use; here I have the pleasure to state that Doctor Edward Miller, of New-York, coincides with my opinion. As soon as the force of the disease is subdued, we can no longer continue the use of calomel as a purge, for fear of a salivation ensuing, as 'tis a fact now generally admitted that this effect results much quicker from the administration of the medicine when given thus, than when taken in small doses.—Where mercury is contraindicated as a purgative, we resort to the pulv rhei cum carbon: Potass, or decoct. senn. comp. with Manna, and either of the alkalies, or magnes: calc: cum solut: sulphat: magnes: all of which seem very well suited from their mild operation on the bowels. Their combination with either of the fixed alkalis are attended with twofold benefit, as they both allay the irritability, and neutralise any morbid acrid irritations of the bowels. These medicines however do often occasion a return of the vomiting, but as there are no articles of this class, not attended with the same inconvenience, we are compelled to resort to them. I have not adopted the practice of combining opium with calomel as recommended by Dr. Miller, my reasons for which must be obvious from the opinions I have expressed; in the event of this disease finding the determination to the head very great, I have been of opinion that the continued use of such treatment as that recommended would have the effect to increase, and strengthen it.

The second indication. To allay irritability of the bowels is effected.

1st. By opiates taken by the mouth, when circumstances will permit, the tincture of opium may be usefully combined with the carbonates of potash or soda, or lime water. The compound acetous tincture of opium commonly called the *Black Drop*, seems well adapted to remain on the stomach; this however is a mere conjecture, having had no case to make trial of it since the idea occurred

2d. By opiate injections, composed of tincture of opium, with different carminatives, and any mucilagenous liquid, the thin mucilage of starch seems to answer extremely well.

3d. By fomentations made with the bitter herbs, vinegar, and laudanum, or with the latter, and wine or spirits.

4th. By the bath of warm water, or vapor. The efficacy and modes of operation of these remedies are too well known to need a comment.

5th. By external irritation, as water impregnated with stimulating substances, also sinapisms, cataplasms, and blisters.

Mercury may be here supposed to exert some beneficial agency, from the well known fact of its tendency to equalise circulation and general excitement. Whyte has expressed this opinion in very strong terms.*

Blood letting has had its advocates as a remedy for accomplishing this indication, as I never saw it employed but twice, I can form no competent opinion of it. The practice has been warmly commended by several periodical Journals in the epidemic Cholera of the East Indies.

Third Indication. To obviate and remove inflammation, the first part of which is effected, by carefully avoiding the internal use of all stimulants. until sufficient evacuations are procured. When inflammation has taken place, we resort.

1st. To blood letting. The abstraction of blood must be small and regulated according to the reaction of the system, to be repeated as occasion demands; this way of procedure is quite necessary as when the determination from the surface is so great, by drawing blood from thence, we sink the circulation there below the power of recovery, and gorge the large vessels so as to prevent their reaction, or contraction.

2d, By blisters. These are applied to the epigastrium, lower part of the abdomen, wrists, or legs; they must act quickly, and ought to be large, especially the one on the abdomen. I say they must act quickly, as from the rapid

* Edinburgh Medical and Surgical Journal.

termination of the complaint, it is necessary that what ought to be done, ought to be done with expedition. To effect this purpose, I apply a sinapism for half an hour, or an hour, according to the effect, then I take it off, rub the part with spirits of turpentine, or what is better, if at hand, the terebinthinate tincture of flies, and there apply a blister, which will draw in from an half hour to two hours almost, as far as my experience goes; but it being very limited, my conclusion may at times prove incorrect. This however can in no way invalidate the practice, as it is but reasonable to infer that vesication will be effected much sooner thus than from a pursuance of the usual method.

3d. By Cataplasms. These are applied to the extremeties with the view of producing a revulsion of blood from internal parts. They at times deserve our preference as they are free from the distressing effects of cantharides on the urinary organs, and if the patient, as often happens, gets well suddenly he will not be anoyed by sores, which inconvenience attends blisters, and occasionally proves the source of much trouble and some suffering.

4th. *And last indication* To correct the ritiated secretions of the Chylopoetic Viscera, and improve the general strength, we resort,

1st. to Emetics: 2d. to Purgatives, both of which we have already mentioned as possessing such virtues as render them important in accomplishing this purpose, therefore it will be unnecessary to notice them farther in this place.

3d. To Mercurial alteratives. The exhibition of mercury in diseases of debility I am aware is contrary to popular prejudice, and to the enlightened opinions of many respectable medical authorities. Dr. Reid in his treatise on nervous diseases, denounces his anathemas against this practice with that elegance, force and impassioned eloquence, for which his writings are so remarkable. He says, speaking of the use of the remedy, in diseases of that character; "although it prove ultimately successful in expelling the enemy, it often during the conflict lays waste the ground upon which it exercises its victorious powers." This observation is certainly true of the remedy used in the common method of prescribing it, when the system is often so weak and irritable, as neither to be capable of bearing the irritation or depletion of that practice. But while I condemn the use of this medicine thus given, and deplore its ruinous effects on the human system, I entertain

quite a different opinion of it, when given in very small doses; when I believe it always safe, and often highly efficacious. Thus given very little irritation, and sensible depletion is produced, and its effects on the secretions and animal spirits are very manifest, the secretions from the bowels which were before of various, and very natural colours, becomes gradually improved; sometimes this change takes place very suddenly. The healthy standard colour, is that of wetted Rhubarb*; the color in children appears to me to be a much lighter shade of yellow. I said it improved the spirits, Abernethy states this fact in the essay last quoted, he says that he was relieved from a very disagreeable attack of Hypochondriaism, by taking five grains of the blue pill; and I recollect a case myself in which I used the remedy in that way, and the subject of it declared, that he felt a greater excitation of spirits from a dose of the medicine than he would from taking several glasses of old wine, he asked whether it did not contain opium, and if he could not take it oftener.—Abernethy relates parallel cases. This mode of practice I believe originated with him, though at present it is quite a fashionable remedy in Great Britain, especially in England, and is now much used in this country.

Abernethy and Faithorn have written at length, on the method of using the remedy: the former gives the blue pill, 5 grains every other night, and the latter gives calomel half a grain every night, both at the same time give tonics, and carefully attend to the condition of the bowels, to obviate the occurrence of costiveness. Having thus shown the authorities for this practice, in similar diseases, I shall now proceed to apply it here. My mode of giving it, has been by the medium of a mucilage of gum arabic, which I conceive lessons its irritation, and serves the purpose of obtruding any acrimony, existing in the bowels, I have given it in the dose of from 1-16 to a 1-12 part of a grain, three or four times a day according to circumstances: an half grain suspended in one ounce of mucilage, gives 1-16 of a grain in each drachm.

I must conclude my remarks on this article with a simile the reverse of that quoted from Reid; the effects of it, when thus given, resemble the course of the magnanimous conqueror, whose object is not desolation and destruction, but the laudable ambition of improving the country, and the peo-

* See Abernethy on the constitutional origin of local diseases

ple he has subdued, where instead of dreariness, disturbance and confusion, we find the condition of every thing ameliorated, and improved, and behold the joyful reign of security, tranquility, and harmony.

For the purpose of improving the general strength, making a part of this indication, while we use mercury as recommended, we resort to the use of tonics, the best of which seem to be the Colombo Quassia and camomile flowers, either in effusion or decoction, and at the same time, the most exact attention is to be paid to the diet, and clothing; and to prevent improper exposures in bad weather.

What seems to stand above all remedies, for affecting the purpose of restoring the strength, and has been eulogised by all writers on this complaint, is the removal from the impure air of cities, to the *free air of the country*, and the power of this change would appear equally beneficial in its prevention as cure.

ART. IV.

SURGICAL CASES,

BY

BENJAMIN B. SIMONS, M. D.

The following valuable Surgical cases, we were permitted to take from the record of the operations performed by the distinguished gentleman, whose name is at the head of this article.

The whole of them are highly interesting, and must be acceptable to the medical public. We would beg particular attention to the cases on Necrosis as well as medullary abscess. We have understood that many distinguished Surgeons in this country and in Europe, are of opinion that cases of Necrosis should be left to the operations of nature, and should this fail, amputation must be resorted to.

We were present at many of the operations here mentioned and were astonished at the success which attended them, and we certainly think the operation ought always to be per-

formed, except there be some powerful contraindication.—

We have no hesitation in asserting that most of the cases here mentioned, under the erroneous impressions existing would have been subjected to amputation, and the limbs thus lost.

The freedom with which large pieces of bone are removed and the reproduction of ossific matter, not only excites our admiration of the vital power, but of the triumph of surgery, when it extends its aid.—*Editors.*

NECROSIS.

CASE I.

Thomas a black boy the property of Mr. M. O. Levy, was attacked, without any known cause, with violent pains in the Tibia. His master supposing it to be rheumatism, treated it as such, but getting no relief and the bone beginning to enlarge, he called in medical aid. The case was pronounced Rheumatism, and treated accordingly. No relief was afforded by the prescriptions. The pain became excruciating with hectic fever and great emaciation. I was requested to visit the patient, pronounced it a case of Necrosis, informed his master an operation must be performed, before ease could be had or a cure made. He told me to perform it. The next day I went with some of my friends taking Heys saw. The integuments were dissected from the Involucrum, the saw was applied longitudinally 6 inches, so as to extend beyond the diseased part; it was reapplied in the same direction, an inch from the first application, and the piece removed: The sequestrum was now discovered, it was loose at the upper end, but not at the lower, for the absorbents had not accomplished their end. It was extracted with some force by the forceps. The sequestrum measures four inches and a half, and is the perfect cylinder of the Tibia. The cavity was dressed with dry lint, the surface in a few days began to blush. Healthy granulations appeared, the wound gradually healed in a few months, and a cure made. He now works at his trade.

In all cases of Necrosis, which have been placed under my care, the upper end of the sequestrum has been in a complete state of sequestration, when the lower has not been in that state. It is well known, the more distant an ulcer or a wound

is from the heart, the more difficult are they to heal. The same cause may influence the absorbent system.

CASE II.

A black boy, aged about 11 years, the property of Mr. James Lowndes, was sent to me with his right forearm enlarged along the Ulna, from the olecranon process down to its extremity at the wrist joint. No cause could be given for the enlargement. His father who attended him, mentioned the pain prevented him from sleeping, and occasioned fever. The fever was evidently hectic as the constitution began to feel the effects of the local action. I told him to inform his master an operation was necessary, and if he would favour me with a visit would explain the operation. He did so, and told me he would let the father act as he wished on the occasion. Several weeks after he brought the boy, he wished he had consented to the operation sooner as he was getting worse.

An incision was made from the olecranon process down to its extremity at the wrist. The integuments were dissected from the involucrum. The portion next the olecranon was more enlarged than below. Hey's saw was applied, an inch of the involucrum was removed. The Sequestrum was discovered. The portion of the involucrum below was so narrow the saw could not be made to act freely on its surface. The antrum trephine was applied down to the wrist. Thirteen perforations were made. The Sequestrum, a perfect cylinder, was exposed and extracted with the forceps, measuring 5 inches and a half. Five small exfoliations were disengaged during the healing process. He has perfectly recovered and uses his hand.

CASE III.

Quamena, a black boy, aged about 8 years, the property of Mr. J Lucas, the celebrated Millwright, was sent to me for surgical assistance. The left humerus just below the head of this bone was much enlarged, extending downwards about 6 inches. An ulcer about the center of the enlargement discharged pus. He had hectic fever and emaciation. The pain was very great before it began to discharge. His habit of constitution was supposed to be scrofulous. In the introduction of a probe it descended in an opening through the involucrum large enough to receive a large quill. The

Sequestrum was easily felt. An incision was made from the head of the humerus downwards beyond the enlargement. The integuments were removed and a large trephine applied so as to include the opening through which the pus escaped. The circular piece was removed. It was necessary to remove four other pieces. The Sequestrum two inches in length, the entire cylinder was removed, its upper extremity joined the head of the humerus; 24 exfoliations were disengaged. It was a long time before this case recovered. He is now well and has the use of his shoulder joint.

CASE IV.

Brawley, a black boy, about 14 years of age, the property of Mr. John Ball, was sent to me from his plantation — The left Tibia was much enlarged, complained of great pain. Heetic Symptoms had commenced, I made an incision 6 inches and separated the integuments from the involucrum, and applied the large trephine removing 7 circles. The Sequestra 5 in number and irregular in their figure were removed. During the cure nine exfoliations were separated. He is now perfectly well.

CASE V.

Miss Dove, aged about 7 years, was in the country for her health, while there she received a contusion on the left Tibia by a fall. This was supposed to be the cause of the swelling of the Tibia, medical advice was obtained. The case was treated as rheumatism, but getting no better, the father was advised to consult me. I proposed an operation; he readily consented to it.

Her case excited considerable feeling as being the only child. I requested the attendance of several of my medical friends. An incision (three inches over the swelling) was made. The integuments were removed, and a large trephine applied to the involucrum. The circular piece was removed. The Sequestra were easily extracted through the opening, the piece two inches in length was the entire cylinder with three original pieces. Eight small exfoliations took place. In performing this operation the pressure which was necessary to make the trephine act fractured the Tibia transversely, so that we had a compound fracture Splints were applied as in cases of such accident. The healing pro-

cess went on. The fracture united and after several months the wound healed. The Callus about the fracture was very thin, and I felt dissatisfied with what nature had done The parents asked my permission to let the child walk, which was given. On a visit to her grandmother, she ran across the room suddenly, when the bone received a second fracture just where it was before fractured by the pressure of the Trephine. Splints were reapplied. In several weeks an exuberant Callus was formed, which has made the tibia perfectly strong. She has perfectly recovered.

CASE VI.

Hannah, aged about 19 years, the property of Colonel Warren, was sent to me by advice of his Physician to have an operation performed on the right radius, about 3 inches above its lower extremity—she complained of great pain. She could give no cause for the disease. Her health was tolerably good. On examination I found it a case of Necrosis. Matter passed through an orifice in the involucrum. A probe was introduced, and the sequestrum felt. A large trephine was applied so as to include the orifice. The circle was removed. The forceps were applied to the sequestrum, but the opening was not large enough for the extraction. I took Hey's saw and cut out a piece of the involucrum two inches in length which facilitated the extraction of the sequestrum being 2 inches and a half in length, and two-thirds of the entire cylinder. The wound was dressed as usual, and she got well in a shorter time than any of the other cases.

MEDULLARY ABSCESS.

CASE I.

Joe, the property of Dr. Richardson, had an ulcer on the tibia which would heal to a certain point and then break out again. This had continued for some time when he was brought to me for surgical aid. On examination I found the bone considerably enlarged and tumefied. I introduced a probe and it passed into the cylinder of the bone, an operation was determined on. An incision was made along the tibia on its anterior portion The integuments were dissected back, and three circles removed with the Trephine. The

intervening space of the circles, and the diseased portions of the cancellated structure were likewise removed with the chisel, which much facilitated the operation. His wound was dressed with dry lint, exfoliations took place, healthy granulations ensued, and a reproduction of osseous substance. In a few months he recovered.

CASE II.

A negro man, the property of Mr. Fowler, was brought to me with an obstinate ulcer of the Tibia, which had been of long standing, and resisted all remedies—the cause of it was not mentioned. The bone was very much enlarged and painful, but on introducing the probe I could find no opening to the medulla. From the enlargement and pain, and obstinacy in healing I judged it a case of Medullary abscess. The Trephine was applied, the circle removed and a considerable quantity of matter escaped, several portions of diseased cancella were removed with the chisel. The wound was dressed with dry lint. Several exfoliations took place, and in a few months he recovered the use of his limb, and was dismissed—cured.

CASE III.

A gentleman who from previous sickness had ulcers which broke out on his left Tibia, and which had resisted all the remedies applied, determined to go to Paris for relief. He went there and placed himself under a distinguished Surgeon. Various remedies were applied, and seatons continued.—From this he received no positive benefit.

He returned to his native country unrelieved. In this state he called on me, I examined the wound, and told him distinctly there was a disease of the medulla of the bone, and that he would never get well unless he submitted to an operation. He consented. I applied the Trephine, extracted several circles of bone and let the matter escape. Several exfoliations took place from the inner cavity of the cylinder of the tibia The wound was dressed in the usual manner, and the gentleman is now in the enjoyment of excellent health.

CASE IV.

Boston, the property of Colonel Pinckney, was sent to me with an obstinate ulcer of the lower extremity of the Tibia,

which would heal up to a certain point, and then break out again. This had continued for some time, the bone was enlarged and painful, and on introducing the probe it entered the cylinder of the bone. I took away two circles with the Trephine, and removed with the chisel, several portions of diseased Cancellæ. The wound was dressed with dry lint, and after several months he recovered.

CASE V.

A negro man, the property of Mr. George Edwards, was sent to me with an obstinate ulcer on the superior portion of the Tibia, which would heal to a certain point and then break out again. The bone was enlarged and painful. The probe was introduced into the wound and passed into the cylinder of the Tibia, one circle was taken away with the trephine, and the matter permitted to escape, several exfoliations took place during the cure. The wound was dressed as usual, and he recovered.

CASE VI.

Pierce, a negro boy, the property of Mr. Wm. Mathews, was sent to me with an obstinate ulcer of the Tibia, which would heal up to a certain point, and then break out again. This continued for some time. The bone was enlarged and painful, and hectic had supervened. The probe when introduced passed into the Cylinder of the Tibia. On its withdrawal matter escaped, four circles of bone were taken out by the Trephine. The intervening space was removed by the Chisel, and a considerable quantity of diseased Cancellæ, likewise removed. During the cure, several exfoliations took place. In the course of several months he recovered.

CASE VII.

A negro boy, the property of Mr. John Ball, was sent to me with an obstinate ulcer on his Tibia, which had been there for a length of time, and which was produced by striking it against a piece of wood. The ulcer was extensive, and the edges of it callus. The bone was enlarged, and painful, and hectic had supervened. The probe was introduced and it extended to the cylinder of the bone. On its withdrawal matter rushed out. An incision was made along the Tibia, the integuments dissected back, and eight circles taken away. The intervening spaces of the circles were removed by the

chisel, and a great quantity of diseased cancellæ likewise time removed. The wound was dressed with dry lint, several exfoliations took place. This case from the extensive progress which had been made by the medullary abscess and consequent destruction of a considerable portion of the bony structure was a long time in recovery.

CASE OF ABSCESS OF THE BRAIN.

A negro man, the property of Mr. J. I. Pringle, while carrying a scantling in consequence of the person carrying it with him, throwing his end down quickly, received a violent blow on the side of the skull. He fell senseless and continued in this comatose state for six months, all of which time he received nourishment by the hand of a nurse who was appointed to attend him. At the expiration of that period, a considerable tumefaction was observed on the side of the head and on the part where he had received the blow. The Physician of the parish, where he resided, was sent for. He opened the swelling and a considerable quantity of purulent matter escaped. Immediately after this, the senses began to be aroused and he awoke, as he said from a sound sleep. Although he had the use of his senses after the pus was discharged, the wound did not heal, but pus continued oozing from it for about six months more. The wound would heal to a certain point and then break out again. Over the orifice was a fungus the size of a large pea. He was sent to me 12 months after the accident, in consequence of so small a wound having continued so long without healing, which induced them to believe there was some injury of the skull — On examining this man I discovered an orifice in the skull near the posterior inferior angle of the left parietal bone, into which I introduced a probe, which descended about 3 inches into the cavity of the skull, on withdrawing it matter rushed out which was a sufficient proof that there was an abscess of the brain, which worked itself through the tables of the skull, discharging itself through the fistulous duct terminating in this fungus. An operation was determined on, I dissected up the scalp, applied a large trephine on the skull, so as to include the orifice through which the matter passed. The circle was removed and a large quantity of matter escaped. I introduced my finger into the orifice and found a

considerable cavity, but extending my finger about two inches, I felt the surface of the brain.

To see the effects which would result, I made pressure upon it. He became senseless, withdrawing the pressure the senses revived. After the operation he got up and walked out, said he felt no inconvenience went to his masters house and wished to work. He came every morning to my office to be dressed. After several months the wound healed, and he is now well.

Where there are large abscesses in the brain, produced by external injury, and consequently a destruction of a considerable portion of the brain, when persons recover, is there a reproduction of brain to fill the space which the abscess occupied?

CASE OF DISEASE OF THE
ANTRUM HIGHMORIANUM.

Sally, a young coloured woman, about 25 years of age, the property of Mr. H. Bennett, had a large tumour growing from the left lower jaw. She said the jaw, from the teeth up to the eye, had been painful for several years, and the cheek swelled very much. Supposing it to arise from a decayed tooth, she had it extracted. Soon after a tumour began to grow from the place, where the tooth was extracted. Several Physicians had prescribed for its cure, but to no effect. Her master was advised to let me cut out the tumor, as its size prevented her from taking the proper quantity of food. On examination, I found it to have its origin from the Antrum. The alveolar processes immediately connected, and in the vicinity of the cavity were carious, and in the incipient state of exfoliation. The tumour was so large as to fill the cavity of the cheek on the same side, extending over the tongue, and out of the mouth, so as to exhibit a very unsightly appearance when exposed. She kept it concealed with a handkerchief, a constant salivation was attendant like in a fracture of the inferior jaw bone. The food gruel or thin soup was sucked in at the right angle of the mouth. She readily consented to the operation.

When in Europe, I had seen the diseased Antrum treated by extracting the two teeth under it, then a perforation made by the Antrum trephine, for the discharge of the mat-

ter, then a small poker heated to a red heat, a canula next applied to the perforation, to defend from the heated poker, which was inserted through the canula into the Antrum, likewise the external operation, where an incision is made on the face, and the perforation made under the malar process; this latter practice did not succeed.

In this case, I thought it more Surgical to cut away as much of the jaw as to freely expose the cavity of the Antrum, that no matter could be confined, and the Lunar or vegetable caustic, could be well applied.

In performing the operation, in the first place the tumor was removed from the jaw; then an incision was made through the integuments in the mouth, from the second incisores along the palatine process as high as the knife could be applied to the palate bone. Next externally the integuments were dissected from the second incisores, along the ala of the nose round and under the infra orbitar foramen, and under the malar process to the pterygoid process of the os palati. A flexible saw, like the main-spring of a watch, applied, and the whole of the left side of the jaw was removed completely exposing the Antrum. By introducing the finger, the orbitar process of this bone could be easily felt. During the operation the jarring (occasioned by the sawing) gave great pain, and there was considerable hœmmorhage, not arising from any distinct arteries, but from the general surface. The surface was dressed with lint, and every third day the lunar or vegetable caustic was applied. No fungus appeared, and the wound healed in six months. She is now perfectly recovered.

CASE OF TUMOUR ON THE ABDOMEN.

A negro man, the servant of Mr. R. Howard, was sent to me with a tumour on the right side of the abdomen. He stated it had been growing twenty years. It covered the left interior abdominal paries, extending up to the umbilicus, and pendulous over the genital organs, as large as the head of a man.

It had many fistulous openings, through which a fœtid fluid oozed, and the tumour whatever it may originally have been, was now evidently carcinometous.

In operating, an incision was made from the umbilicus, down to the symphysis pubis, along and below pouparts lig-

ament, exposing to view the spermatic cord, then along the spine of the ilium, up to the lumbar region and across to the umbilicus, meeting the commencement of the first incision.

The tumour was dissected out, leaving the abdominal muscles deprived of their fascia. It was necessary to put ligatures on fifteen arteries, which had increased to a considerable size. He lost much blood during the operation, and was much debilitated.

The skin was so diseased, that none could be saved from the tumour, so that we had a large uncovered surface. Sutures were applied in all directions, so as to draw over the skin, as much as possible. The uncovered abdominal muscles, still presenting a large surface, were covered with lint. Adhesive straps were next drawn over the sutures and lint, and those bandaged. Two days after the operation, a laudable suppuration appeared. The skin in a week adhered to the muscles, and the extensive surface, which could not be covered with skin, continued to suppurate and heal, from June until November, when it completely cicatrized.

EXTRAORDINARY CASE OF TUMOUR.

I was requested to visit the son of a gentleman, who was about six months old, with a tumour on the left leg extending from the inner ankle up to near the knee joint. The growth of the tumour was so rapid, that the child began to be emaciated, and the opinion was, that the blood which ought to nourish the general system, was determined to this morbid growth. The tumour at the birth was the size of a nutmeg, and in the course of six months grew nearly to the size of his head. The mother ascribed this tumour to her seeing a gentleman, who lost his leg, by dry gangrene. An operation was necessary, I requested Dr. Baron, who was acquainted with the family to see the child, and give his opinion. He was astonished at the size and rapid growth of the tumour, and thought so extensive an operation could not be performed on so young a child, with success. The father called on me to know, what was to be done; he would willingly consent to have the tumour removed, no matter what result took place.

He was informed the operation would be performed provided that during the dissection should the adhesions of the tumour to the vessels and muscles of the leg be so numerous

as to occasion their destruction necessary beyond a certain extent, if he would allow me to amputate the leg—he readily consented. The next day several of my friends attended.—The child was secured by several assistants. An incision extending from the upper extremity of the tumour near the knee was made down to its lower on the outer side, saving as much skin as would meet the opposite incision. The base of the tumour was dissected from the muscles and tendons, including their fascia completely, so that the skin of the inner side was brought up to that of the outer, and cut, by performing the operation in this way, when the wound was closed with adhesive straps it appeared to be a simple incision. In removing this tumour some of the adhesions extended so far around the gastrocnemius as to make it necessary to dissect up the whole of the surrounding skin. The tumour was steatomatous. The wound healed in ten days, mostly by the first intention. The child during the operation expressed great pain, by its screaming and fainting; the five arteries which supplied the tumor were of considerable size, and were derived from the posterior tibial artery; the saphœna-major was cut away.

In the dissection of tumours, when I wish the skin to unite quickly to the muscular surface, I always dissect off the fascia from the muscles in the manner it is done for demonstration of the muscles by an expert dissector. The muscular surface is more vascular, whereas the fascial is less so, and requires more inflammation to bring it into the advesive state which often runs into suppuration.

ART. V.

TRISMUS NASCENTIUM,

BY

CHARLES W. CAPERS, M. D.

This is a disease very common in our country, and for the cure of which no medicine powerful enough has yet been discovered. Several authors have written upon this subject, but none in a very satisfactory manner. Dr. Thomas, in a

few lines in his modern practice has given the best account of it, which I have any where met with, but he speaks very doubtfully as to the cause, is very superficial in his directions to prevent the disease from making its attack, and acknowledges, very candidly, that he knows of no cure.

From the frequent occurrence of the disease, I was led, first to attempt its cure, but failing in every instance, after trying every remedy which occurred to my mind, as proper to be used, I gave up the attempt as hopeless, and turned my attention to the employment of remedies which might be instrumental in preventing its taking place. In this I have been more fortunate, and after having been in the habit of using my remedies for some time with uniform success, I herewith send you an account of my method of proceeding, in hopes that it may be useful

This disease is so well known, that it requires no particular description in order to distinguish it from any other to which children are liable. It is, however, necessary to state, that it is attended with spasm, a contraction of the jaw, an ulceration of the umbilicus, and always occurs before the 9th day, and seldom before the 4th or 5th. Its cause has been ascribed :—

1st. To cold.

2d. To smoke.

3d. To retention of the meconium.

4th. To confined air.

5th. To dividing the funis umbilicalis in an unproper manner ; and,

6th. To the ulceration which succeeds the falling of the funis. It cannot be owing to cold, because this agent would have equal effect upon the 10th day, as upon the 8th or 9th. The same objections would occur with regard to smoke.—Were it owing to a retention of the meconium, it would probably make its appearance sooner. Upon the subject of confined air, I shall beg leave to copy a few lines from a recent English publication, called the Lancet.

Dublin Lying-in Hospital.—"In this Hospital 2,944 infants out of 7,650 died in the years 1782, 3, 4 and 5, within the first fortnight after their birth, that is nearly one child out of every six They almost all died in convulsions, of what the nurses called nine day fits, because they came on within nine days after their birth. These children, many of them, foamed at their mouths, their thumbs were drawn into

the palms of the hands, the jaws were locked, the face was swelled, and looked blue, as though they were choaked.

This last circumstance led the Physicians to conclude that the rooms in the Hospital were too close and crowded, and hence that the infants had not a sufficient quantity of good air to breathe. They contrived, therefore, air pipes, six inches wide, which were placed in the ceiling of each room.—Three holes, an inch wide, were bored through each window frame, and a number of holes were made in the doors at the bottom. Thus the rooms were kept sweet and fresh, and the consequence has been, from the register in that Hospital that,

In 1786	out of	1,372	children,	there	died	51
87	"	" 1,375	"	"	"	59
88	"	" 1,496	"	"	"	55
		4,243				165

So that since the alteration of the rooms as to airiness, out of 4,243 there died 165 children; whereas before the average amount of deaths from the same number was 1,632."

Upon the subject of ventilation, I shall here make no remarks, it being so well understood, at the present day, that in the construction of all Hospitals, it is considered of the first importance that all the wards should be freely ventilated, and that without this essential agent, medicine will be of but little avail. Unfortunately however for this theory in our country, these cases occur most frequently among a class of people where there is no want of air.

Fifthly, as to the division of the funis umbilicalis being the cause, I must observe, that I have repeatedly divided it with sharp instruments, and with proper attention, and yet the disease has taken place; besides, when we consider the great number of deaths which take place from this disease, it is charging the profession with gross neglect when we ascribe it to this cause, and might literally be styled an approbrium medicorum.

Sixthly, the last, and which I think to be the true cause, is the ulceration which succeeds the falling of the funis. This, I believe, was first suggested by Dr. Thomas, but, as I before stated, he speaks very doubtingly on the subject, and his method of treatment, I think, rather calculated to cause the disease, than to prevent it.

The reasons which I shall offer in support of this opinion

are that it always occurs at the time of the falling of the funis, and in every case in which I have made a post mortem examination, when death has occurred from this disease, I have uniformly found ulceration, and dissection shews a highly inflamed state of the parts. Negro children are much more liable to this disease than whites, and this has led some to ascribe the cause of it to smoke, and to exposure; but I trust I have sufficiently shewn the fallacy of this reasoning. Negroes, it is well known, at all ages, are more subject to spasmodic affections than whites, and to this let me add, that the greater part of them have a protrusion at the navel. I am by no means prepared to give this as one of the exciting causes, but I merely state it as a fact, and in almost every instance when death ensued, I found this to be the case.—Whoever will examine a navel thus formed, will find the superior part only protruded, whilst the lower is contracted, and drawn into the flaccid folds of the abdomen, which envelops it, forming as it were a sheath. The ulcerated part is highly inflamed by the friction which takes place in the movement of the body, and the excoriating matter, and filth, which collects, is there retained, unless carefully washed away; thereby preventing the process of healing

Looking upon this therefore as the true cause, my attention was directed to prevent it as much as possible, and I was led to adopt the following plan of treatment:

The child, after securing the funis, is to be washed* in water of a proper temperature (about 76 deg. of F.) and this is to be repeated at least every 24 hours, care being taken that the child is properly dried, after each ablution.—This is of advantage in many respects; it keeps the child clean, prevents it from being soapt to take cold, and is of itself, a powerful tonic. A little soft linen or lint, is to be moistened with sweet oil, and carefully applied to the funis, and umbilicus, as soon as the funis commences separating, the oil is to be omitted, and some ceratum Resinosum spread upon lint and applied in its stead. Upon the 4th, or 5th day, or sooner, if the separation proceeds more rapidly, a little spirits of turpentine is to be poured upon the cerate and applied

* It may appear strange to some, that any directions should be given to wash the children; but it will be recollected, that the greater part of these cases occur among the blacks, and I know it to be a practice among them after washing the child, immediately after the birth, to apply some burnt rag to the umbilicus, and the child's body is not washed again until the 10th day. Some of them, it is true, live, but I have not the least hesitation in saying that thousands every year fall victims to this absurd practice.

directly to the separating part, and the dressing should be renewed three or four times during the 24 hours, and the parts carefully washed, each time, with a little castile soap and warm water. This is all that I have found necessary to be done:—

It is true that although I deny the influence of cold, &c. to be the cause of this disease, in all instances, yet, I by no means say that they do not sometimes produce it, and there is not the least doubt but that they often act as auxiliaries, to what I have considered as the true cause. A due attention must therefore be paid to all of them, particularly to exposure to cold, and to the state of the bowels.

ART. VI.

A case where many pieces of bone were found in the tissue of the lung, and which may constitute a kind of Phthisis to be termed osseous, by M. Rullier, Physician of L'hopital Bicetre in Paris. Translated from the French, with remarks, by W. MICHEL, *M. D.*

Mrs. M—— G——, aged sixty seven, of a short stature, strong constitution, and of a violent temper, had always enjoyed good health, although she laboured hard. At the age of thirty, during her menstrual discharge, one of her arms was fractured. This caused a suppression of the evacuation which never afterwards returned, but which was not however attended with any dangerous consequences,

Three months before she entered the Hospital la Charite, M—— G—— exposed herself while in a perspiration and caught a violent cold. The cough continued for a long time, and after two months and a half, she resorted to a remedy considered sovereign by the old women of her neighbourhood, which was to cure, only after having produced hœmoptysis. This pretended specific was soft, grainy, yellow, very bitter and resembled mustard seed pulverised and mixed with vinegar. It was divided into several doses to be taken every other day; the 7th day after the third dose, the patient was much salivated, the next day the ptyalism in-

creased, and was accompanied by a copious expectoration of blood, which became very alarming from its frequent return. Two pints of it were rejected at one time. This blood was for the most part coagulated in clots of an oblong form, and of two inches in diameter. This woman was carried to the Hospital on the 21st of April 1815, in the following situation.

The cough was frequent, and the expectoration of a liquid and clotted blood of a bright red, unmixed with mucus.—There was general pain in the chest, the respiration was laborious, and the patient, when lying on her back, was obliged to recline on the right side, the percussion of which produced a dull sound contrasting greatly with the clear sound obtained from the left. The pulse was high, quick and hard, the skin dry and hot, the thirst great, the headach slight, and the appetite unimpaired, notwithstanding a furred tongue and bitter taste. (Diet, irritating pediluvia, mucilaginous and diluent drinks.) In a few days there was such a decided amendment, that it was believed the hemoptisis had only been produced by the irritating medicine, the patient had at first made use of; the quantity of expectorated blood gradually diminished and finally disappeared, as well as the pain in the chest, the fever ceased, the appetite remained good, and the digestion and excretions naturally performed. She was strong, had lost little of her flesh, and slept long and calmly; the voice only had remained hoarse. Eight days after this amendment, the fever returned, the cough redoubled, the expectoration soon became copious, thick, grayish and fœtid, the pain in the chest again grew violent, but confined itself to the sternum. The patient at this time being informed of the death of her daughter, her only support, was deeply afflicted by the tidings; the expectoration immediately stopped, and M—— G—— died composedly on the morning of the 9th of May, after several attacks of suffocation during the night, sixty hours after the relapse, and twenty one days from the time she had been confined to her bed.

Opening of the body 48 hours after death.

The left lung free from all adhesion, was rather dense, of a dark red, and filled with a frothy and bloody serum; the whole of its tissue was interspersed with a great number of

hard, semitransparent miliary granulations of a fibro-cartilaginous appearance.

The right lung was adherent throughout the thoracic parietes; but its adhesion to the diaphragm, and the inferior part of the circumference of the chest was formed by a cellular substance which could easily be destroyed, while higher up and towards the centre, the lung, the pleura costalis and pulmonalis were entirely confounded, and that organ was there united to the ribs by a dense coat, half an inch thick, resembling those white indurations which are often the consequence of the chronic inflammation of a number of tissues. The inferior part of the substance of the lung had acquired a slight degree of thickness, and contained a great many tubercles which were somewhat softened; here and there in the same region were found tuberculous cavities half an inch in diameter, filled with a white and granulour matter. In the middle of the superior lobe was a large, rough & anfractuous cavity nearly empty, which communicated with several other tuberculous cavities. These still full of the purulent matter which is furnished by the softening of the tubercles, converged towards the first, whose extent, sufficiently accounted for the form and size of the clots of blood, rejected by the patient in the first days of the hemoptisis. Several arterial vessels of a remarkable size, & a number of ramifications of the bronchiæ, evidently terminated there, & presented a disposition which I will mention hereafter. This cavity was lined with a thin albuminous & bloody coat. On its rough parietes were found great many sharp bones, almost uncovered; the largest of them of a triangular & pyramidal shape, contributed by one of its surfaces, to the formation of the superior and external parietes of the cavity. The rest of the superior and the middle lobe contained also great many pieces of bone, that looked as if implanted in the pulmonary tissue, to which they were attached by a thin, close and red cellular membrane. They all exhibited a perfect identity with other bones, having apparently the same qualities and structure, and varying only in form and size. The small ones were like thin blades, whose irregular edges corresponded either with the pulmonary vessels or the divisions of the bronchiæ. The most remarkable of these pieces, which from its form and texture might be compared to one of the tarsus bones, was more than an inch and a half in length. This is the one mentioned above, as forming part of the anfractuosity. It had holes

through which passed several bifurcations of the bronchiæ, and pulmonary artery. After having crossed these holes or furrows, a few arterial vessels formed several red mamillary tubercles, resembling the granulations of sores, and projecting in the cavity. These mamillæ were the termination of those vessels; for it was easy, after making the excision of them, to introduce a stilet in their cavity, and to reach the trunes nearest to the pulmonary artery. One of the divisions of this vessel, of the size of a crow quill, I have also been able to trace to the place where it opened. A small clot of blood obstructed its extremity, on the side of the cavity, a circumstance that easily explained the several dangerous hœmorrhages, which had taken place, and the complete suspension of that accident, after the species of cicatrization of the vessel.

With a view of ascertaining, which of the organic principles of the lungs was the seat of that ossification, I carefully examined the tracheæ and the bronchiæ and followed these last in their smallest subdivisions; but I found no alteration in their consistency or their structure: The mucous membrane, which covers these tubes, was only much redder than is usually observed. The pieces of bone were entirely foreign to them, and merely adhered. These remarks extend also to the principal divisions of the pulmonary veins and arteries.

REMARKS.

It is not uncommon to meet in the lungs with cretaceous concretions, which assume the appearance of white or grey calculi, of a round or angular form, whose size varies from a grain of millet, to a pea or an almond which are hard or friable, and sometimes contained in a fibrous or cartilaginous cyst; this constituting Dr. Bailey's calculous phthysis. We cannot say the same of the ossification of the lungs, for there are very few well authenticated examples of it! "The accidental ossification of the pulmonary tissue, says M. Laennec, is never perfect; at least I have never seen productions of the kind, which exhibited a fibrous texture, and whose centre had the solidity of long bones It appears that in the formation of those accidental ossifications, nature employs a great quantity of phosphate of lime, and small portion of gelatine, which is not the case in bone; from whence

it follows that these ossifications, oftener look like small stones than bones." Morgagni asserts, having seen the cartilaginous segments of the trachea, ossified in the most profound part of the lungs, and even in the trunk of that tube, but he does not relate a single case of ossification of the pulmonary tissue, if we do not call so those oretaceous concretions, which differ from them in their structure, and the proportions of their chemical principles

Mr. Rullier's observation therefore offers much interest, not only on account of the details it is accompanied with, but because it furnishes us with a fact that very seldom or never occurred, at least if we are to judge by the records of pathological anatomy. The œtiology of the formation of this extraneous body in the substance of the lungs is involved in great obscurity. It is probable that it existed before the catarrhal affection which induced M—— G—— to resort to the Hospital. I should also be inclined to believe that the tuberches whose softening had occasioned such large excavations in the lung had also preceded the catarrhal affection. Notwithstanding the bold assertions of some authors, it is as yet impossible to determine in what relation of cause or effect are the phlegmasiæ of the lungs and the degenerations found in those organs. This question is composed of too many unknown principles to be soon settled.

ART. VII.

Case of Peurperal Convulsions successfully treated with Ol: Terebinthinæ, by I. A. Johnson, *M. D.*

TO THE EDITORS OF THE CAROLINA JOURNAL,

Gentlemen,—Should you deem the subjoined case, shewing the good effect of Oleum Teubenthinæ, in Peurperal Convulsions, worthy of a place in your useful Journal, please accept the same from, gentlemen,

Your most obedient,

I. A. JOHNSON.

Early on the morning of the 19th September, 1824. I was called to Martha, a servant of Mr. J—— F——, about 17, whom I found in labour, with her first child, and in a perfect state of insensibility; she had two severe convulsions; labour progressing very slowly. As her bowels were constipated, I ordered injections to be administered, which had the desired effect in releaving them; they, however, did not lessen the determination to the head. I then bled her copiously, (near 2 lbs.) but to very little service, as no more was effected by it than to render the Uterine contractions more frequent and effectual; the coma still continuing, with cold extremities. Before labour was completed, the recurrence of the convulsions induced me to detract more blood (15 or 16 ozs.) which was soon followed by her safe delivery.

The labour being over, and the patient made comfortable, every effort was made to evacuate her bowels by repeated doses of Ol: Ricini, but with little effect. At 5 o'clock in the afternoon of the same day, (10 hours after delivery) the convulsions returned with increased violence, and accompanied with violent raving; tearing every thing in pieces. I ordered her to be well secured; the dose of Castor Oil increased, and cold water applied liberally to her head; two blisters were applied to her thighs, and synapisms, to her wrists and ankles. I visited her again at 9 o'clock the same evening, and finding no material benefit arising from the previous treatment, though the medicine and blisters had acted, I combined 4 parts of Ol: Teribinthinæ, and 3 parts of Ol: Ricini, with direction, to give a wine glass full of this mixture every hour, until some good effect was produced.—On visiting her on the following morning, to my great surprise and joy, I found her wonderfully better, though still insensible in some degree; I was informed by the nurses that she became sensible in a very short time after the first dose of the Teribinth, she had but 3 convulsions after she commenced with the mixture, her dilirium gradually subsided, and in 24 hours after she nursed her child, and in a very short time was perfectly restored to health. She had in all 20 fits.

N. B. The severe effects which it has been supposed the Ol: Teribinth has upon the kidnies does not follow, when it is used in large doses, or combined with oil.

ART. VIII.

Observations on the use of Pyroligneous Acid in Sphacelus, and fœtid Ulcers, by THOS. Y. SIMONS, *M. D. Port Physician, &c. &c.*

The Pyroligneous acid, has been for some time known, as a powerful antiseptic, but I do not recollect having seen it mentioned any where, as applied medicinally. Its powerful antiseptic quality induced me first to try it, in a case where all other antiseptics had failed, and I have continued since, whenever I have had opportunities, to use it in sphacelus, and fœtid ulcers. The following is the case, in which I first used it :—

On the night of the 11th of June, I was called to a black man, æt 60, who had just come from the country for surgical aid, not having passed his urine, for six days. The bladder was distended much above the pubis, was tense, and when touched gave much pain. The penis scrotum and perinæum, were tumefied, and the patient exhibited all that anxious restlessness, consequent upon such a state.

I gave him anodynes, anodyne injections, and the warm bath. This relieved him partially, and a few drops of urine were passed. I then introduced the catheter, and met no obstruction, until it approached the bulb of the Urethra by changing the position however, and gently pressing on, I succeeded in passing it into the bladder, when a considerable quantity of thick turbid urine filled with mucus past off. When the catheter was withdrawn, a gravel of the size of a barley seed came away, the scrotum at this time was much enlarged. There were several scars in the perinæum of former fistulas.

In the morning when I called, the penis and scrotum, were considerably enlarged. I deemed this to arise from a rupture of one of the old fistulous scars in the Perinæum, and an infiltration of the urine through the cellular texture, I puncturd the penis and scrotum, and obtained fully a pint of urine. This continued to drip. The bowels were kept open, and Dover's powder with nitre given him. The tumefaction al-

though lessened, still continued. On the third day, I observed the pendulous part of the scrotum Sphacelus. Bark poultices were applied, and bark and wine given internally. Still mortification continued rapidly to progress, through the whole scrotum, and the perinæum. Under these circumstances, I called in Dr. B. B. Simons, who suggested the propriety of laying open the perinæum and urethra, which I did, when the urine passed through this artificial outlet, and the natural passage. The bark and wine, was continued. Dover's powders given at night, and a magnesia mixture, during the day, which lessened greatly the acridity of the preponderating uric acid · The sloughing and sphacelus however still continued rapidly to progress. Charcoal and bark poultices were used with no benefit, except lessening the fœtor. At this time the Thermometer was fully 86 deg. Hectic took place and every bad symptom accompanying such a state.

It accidentally occurred to me upon reflecting on the case, that the Pyroligneous acid, might be beneficial, accordingly, one portion of the acid diluted in six parts of water, was applied constantly to the sloughing surface. In 24 hours, a line of demarcation was observed. In a day more the mortified surface separated, and healthy granulations appeared. The wash was continued, and magnesia given him, the parts cicatrized, the gravel was discharged, and the patient dismissed, cured.

I have since, been called in consultation to a case, where the penis was much tumefied and gangrenous, arising from destruction of part of the Urethra, and infiltration of urine, into the cellutar texture. The pyroligneous acid wash, was applied. In two days, the sphacelus separated, and a healthy granulation took place. Bark and wine was given internally.

In many cases of fœtid ulcers, its application has destroyed the fœtor, and in a very short time produced a healthy action. As far as my experience extends, I would recommend its use in every case of sphacelus, as well as of fœtid ulcers, as I am persuaded it is one of the most agreeable and efficient applications, known or used by surgeons.

ART. IX.

On Soils : their constituent parts. On the analysis of Soils. Of the uses of the Soil. Of the Rocks and Strata found beneath Soils. Of the improvement of Soil. Taken from the Elements of Agricultural Chemistry, by Sir HUMPHREY DAVY, *Bart. &c. &c. &c.*

We have thought that an article on the nature of Soils, &c. would be acceptable both to our agricultural and other patrons.

The work from which the subsequent extract is taken, although much and justly celebrated, has not we believe been generally read in this portion of our country It is important that our Agriculturists, animated as they now are with the patriotic desire of improving their country, should conduct their enquiries and researches upon the principles of Philosophy, the only true method of arriving at just conclusions. To do this they should certainly be acquainted with the method of ascertaining the nature and character of Soils, a knowledge of which is the basis of all correct experiments and researches. Without it, failures must result, and many experiments which, if founded upon a knowledge of well ascertained facts, would add greatly to the improvement of a country, from this deficiency must necessarily be lost.— There is nothing like a philosophical system in the attainment of truth, and especially when connected with enquiries into the power and operations of nature.

There are no class of people who have greater leisure or opportunities for the improvement of their country, than the Planters of the South, and now when one of our staple commodities is diminished in value, and we know not how soon the other may be so, it becomes them to attend especially to the science of Agriculture. Most of our Planters have had classical educations, and if they were to devote their attention to different branches of physical enquiry, it would be impossible to calculate the immense advantages and wealth which would accrue to our State. It is an error too prevalent that the Agriculturist should be altogether practical, and the influence of science is thus suffered to pass unnoticed. However scientific principles may be mechanically applied, it is very evident that all improvement must stop with them. Nay, withou

em. like the inferior animals, we must continue in one monotonous and unaltered course.

"Science," justly observes Sir H. Davy, "cannot long be despised by any persons as the mere speculation of Theorists, but must soon be considered by all ranks of men in its true point of view, as the refinement of common sense, guided by experience, gradually substituting sound and rational principles, for vague popular prejudices. The Soil offers inexhaustible resources, which when properly appreciated and employed, must increase our wealth, our population, and our physical strength."

We are happy to see however the increase of Agricultural Societies, and the spirit of emulation which they are endeavouring to excite. It is an evidence of a prospective improvement of the country.

We regret we have not an original article to present our readers with on Agriculture, but hope that our next number will make ample amends. We are sure that our Agricultural patrons will cooperate in giving efficiency and support to this attempt, to register and disseminate the improvements which take place in the different departments of Physical Science, and that the Agricultural department at least shall not be uninteresting from the want of matter.

Agriculturists are emphatically identified with the Soil on which they live, and ought above all to feel a lively interest in every thing connected with the improvement, aggrandisement, or reputation of their country.

"The true objects of the Agriculturists are likewise those of the patriot. Men value most what they have gained with effort; a just confidence of their own powers results from success; they love their country better, because they have seen it improved by their own talents and industry; and they identify with their interests the existence of those institutions which have afforded them security, independence, and the multiplied enjoyments of civilized life."—*Editors.*

No subjects are of more importance to the farmer, than the nature and improvement of soils, and no parts of the doctrines of agriculture, are more capable of being illustrated by chemical inquiries.

Soils, are extremely diversified in appearance and quality, they consist of different proportions of the same elements,

which are in various states of chemical combination, or mechanical mixture.

The substances which constitute soils, are certain compounds of the earths, silica, lime, alumina, magnesia, and of the oxides of iron and manganesum, and animal and vegetable matters, in a decomposing state, and saline acid or alkaline combinations.

The silica in soils is usually combined with alumina and oxide of iron, or with alumina, lime, magnessia, and oxide of iron, forming gravel and sand of different degrees of fineness. The carbonate of lime is usually in an impalpable form: but sometimes in the state of calcareous sand. The magnessia, if not combined in the gravel and sand of soil, is in a fine powder united to carbonic acid. The impalpable part of the soil, which is usually called clay or loam, consists of silica, alumina, lime, and magnessia, and is in fact, usually of the same composition as the hard sand, but more finely divided. The vegetable, or animal matter, (and the first is by far the most common in soils,) exist in different states of decomposition. They are sometimes fibrous, sometimes entirely broken down and mixed with the soil.

To form a just idea of soil, it is necessary to conceive different rocks decomposed or ground into parts and powders, of different degrees of fineness, some of their soluble parts dissolved by water, and that water adhering to the mass, and the whole mixed with larger or smaller quantities of the remains of vegetables and animals in different stages of decay.

It will be necessary to describe the processes by which all the varieties of soils may be analysed. I shall be minute in these particulars, and, I fear, tedious; but the philosophical Farmer will, I trust, feel the propriety of full details on this subject.

The instruments required for the analysis of soils are few, and but little expensive. They are a balance capable of containing a quarter of a pound of common soil, and capable of turning when loaded, with a grain; a set of weights from a quarter of a pound troy to a grain; a wire sieve, sufficiently coarse to admit a mustard seed through its apertures; an Argand lamp and stand, some glass bottles; porcelain or queens ware evaporating basins; a wedgewood pestle and mortar, some filtres made of half a sheet of blotting paper, folded so as to contain a pint of liquid, and greased at the edges; a bone knife, and an apparatus for collecting and measuring acriform fluids.

The chemical substances or reagents required for separating the constituent parts of the soil, are muriatic acid (spirit of salt,) sulphuric acid, pure volatile alkali dissolved in water, solution of prussiate of potash and iron, succinate of ammonia, soap lye, or solution of potassa, solutions of carbonate of ammonia, of muriate of ammonia, of neutral carbonate of potash, and nitrate of ammoniac.

In cases when the general nature of the soil of a field is to be ascertained, specimens of it should be taken from different places, two or three inches below the surface, and examined as to the similarity of their properties. It sometimes happens, that upon plains, the whole of the upper stratum of the land is of the same kind, and in this case one analysis will be sufficient; but in vallies, and near the beds of rivers, there are very great differences, and it now and then occurs that one part of a field is calcareous, and in this case, and in analogous cases, the portions different from each other should be separately submitted to experiment.

Soils when collected, if they cannot be immediately examined should be preserved in phials quite filled with them, and closed with ground stoppers.

The quantity of soil most convenient for a perfect analysis, is from two to four hundred grains, it should be collected in dry weather, and exposed to the atmosphere till it becomes dry to the touch.

The specific gravity of a soil, or the relation of its weight to that of water, may be ascertained by introducing into a phial, which will contain a known quantity of water, equal volumes of water and of soil, and this may easily be done by pouring in water until it is half full, and then adding the soil until the fluid rises to the mouth; the difference between the weight of the soil, and that of the water, will give the result. Thus if the bottle contains four hundred grains of water, and gains two hundred grains when half filled with water and half with soil, the specific gravity of the soil will be two, that is it will be twice as heavy as water, and if it gained one hundred and sixty five grains, its specific gravity would be 1825, water being a 1000.

It is of importance, that the specific gravity of a soil should be known, as it affords an indication of the quantity of animal and vegetable matter it contains, these substances being always most abundant in the lighter soils.

The other physical properties of soils should likewise be

examined before the analysis is made, as they denote, to a certain extent, their composition, and serve as guides in directing the experiments. Thus siliceous soils are generally rough to the touch, and scratch glass when rubbed upon it, ferruginous soils are of a red or yellow colour, and calcareous soils are soft.

1st. Soils, though as dry as they can be made by continued exposure to the air, in all cases still contain a considerable quantity of water, which adheres with great obstinacy to the earths and animal and vegetable matter, and can only be driven off from them by a considerable degree of heat The first process of analysis is, to free the given weight of soil from as much of this water as possible, without in other respects, affecting its composition; and this may be done by heating it for ten or twelve minutes over an Argand's lamp, in a basin of porcelain, to a temperature equal to 300 Fahrenheit; and if a thermometer is not used, the proper degree may be easily ascertained, by keeping a piece of wood in contact with the bottom of the dish; as long as the colour of the wood remains unaltered, the heat is not too high; but when the wood begins to be charred, the process must be stopped. A small quantity of water will perhaps remain in the soil even after this operation, but it always affords useful comparative results; and if a higher temperament were employed, the vegetable or animal matter would undergo decomposition, and in consequence the experiment be wholly unsatisfactory.

The loss of weight in the process should be carefully noted, and when in four hundred grains of soil, it reaches as high as 50, the soil may be considered as in the greatest degree absorbent, and retentive of water, and will generally be found to contain much vegetable or animal matter, or a large proportion of aluminous earth. When the loss is only from 20 to 10, the land may be considered as only slightly absorbent and retentive, and siliceous earth probably forms the greatest part of it.

2d. None of the loose stones, gravel, or large vegetable fibres should be divided from the pure soil till after the water is drawn off; for these bodies are themselves often highly absorbent and retentive, and in consequence influence the fertility of the land. The next process, however, after that of heating, should be their separation, which may be easily accomplished by the seive, after the soil has been gently

bruised in a mortar. *The weights of the vegetable fibres, or wood, and of the gravel and stones should be separately noted down, and the nature of the last ascertained; if calcareous, they will effervesce with acids, if siliceous, they will be sufficiently hard to scratch glass; and if of the common aluminous class of stones, they will be soft, easily cut with a knife, and incapable of effervescing with acids.*

3d. The greater number of soils, besides gravel and stones, contain larger or smaller proportions of sand of different degrees of fineness, and it is a necessary operation, the next in the process of analysis, to detach them from the parts in a state of more minute division, such as clay, loam, marle, vegetable and animal matter, and the matter soluble in water. This may be effected in a way sufficiently accurate, by boiling the soil in three or four times its weight of water; and when the texture of the soil is broken down, and the water cool; by agitating the parts together, and then suffering them to rest.

In this case, the coarse sand will generally separate in a minute, and the finer in two or three minutes, whilst the highly divided earthly, animal, or vegetable matter will remain in a state of mechanical suspension for a much longer time; so that by pouring the water from the bottom of the vessel, after one, two or three minutes, the sand will be principally separated from the other substances, which, with the water containing them, must be poured into a filtre and after the water has passed through, collected, dried, and weighed. The sand must likewise be weighed, and the respective quantities noted down. The water of lixiviation must be preserved, as it will be found to contain the saline and soluble animal or vegetable matters, if any exist in the soil.

4th. By the process of washing and filtration, the soil is separated into two portions, the most important of which is generally the finely divided matter. A minute analysis of the sand is seldom or never necessary, and its nature may be detected in the same manner as that of the stones or gravel. It is always either siliceous sand, or calcareous sand, or a mixture of both. If it consist wholly of carbonate of lime, it will be rapidly soluble in muriatic acid, with effervescence; but if it consist partly of this substance, and partly of siliceous matter, the respective quantities may be ascertained by weighing the residuum after the action of the acid, which

must be applied till the mixture has acquired a sour taste, and has ceased to effervesce. This residuum is the siliceous part: it must be washed, dried, and heated strongly in a crucible; the difference between the weight of it and the weight of the whole, indicates the proportion of calcareous sand.

5th. The finely divided matter of the soil is usually very compound in its nature; it sometimes contains all the four primitive earths of soils, as well as animal and vegetable matter; and to ascertain the proportions of these with tolerable accuracy, is the most difficult part of the subject.

The first process to be performed, in this part of the analysis, is the exposure of the fine matter of the soil to the action of muriatic acid. This substance should be poured upon the earthy matter in an evaporating basin, in a quantity equal to twice the weight of the earthy matter, but diluted with double its volume of water. The mixture should be often stirred, and suffered to remain for an hour, or an hour and a half, before it is examined. If any carbonate of lime or of magnesia exist in the soil, they will have been dissolved in this time by the acid, which sometimes takes up likewise a little oxide of iron, but very seldom any alumina.—The fluid should pass through a filtre; the solid matter collected, washed with rain water, dried at a moderate heat, and weighed. Its loss will denote the quantity of solid matter taken up. The washings must be added to the solution, which if not sour to the taste, must be made so by the addition of fresh acid, when a little solution of prussiate of potassa and iron must be mixed with the whole. If a blue precipitate occurs, it denotes the presence of oxide of iron, and the solution of the prussiate must be dropped in till no farther effect is produced. To ascertain its quantity, it must be collected in the same manner as other solid precipitates, and heated red; the result is oxide of iron, which may be mixed with a little oxide of manganesum.

Into the fluid, freed from oxide of iron, a solution of neutralized carbonate of potash must be poured till all effervescence ceases in it, and till its taste and smell indicate a considerable excess of alkaline salt. The precipitate that falls down is carbonate of lime; it must be collected on the filtre, and dried at a heat below that of redness.

The remaining fluid must be boiled for a quarter of an hour, when the magnesia, if any exist, will be precipitated

from it, combined with carbonic acid, and its quantity is to be ascertained in the same manner as that of the carbonate of lime.

If any minute proportion of alumina should, from peculiar circumstances, be dissolved by the acid, it will be found in the precipitate with the carbonate of lime, and it may be separated from it by boiling it for a few minutes with soap lye, sufficient to cover the solid matter; this substance dissolves alumina, without acting upon carbonate of lime — Should the finely divided soil be sufficiently calcareous to effervesce very strongly with acids, a very simple method may be adopted for ascertaining the quantity of carbonate of lime, and one sufficiently accurate in all common cases.

Carbonate of lime, in all its states, contains a determinate proportion of carbonic acid, *i. e.* nearly 43 per cent, so that when the quantity of this elastic fluid, given out by any soil during the solution of its calcareous matter in an acid is known, either in weight or measure, the quantity of carbonate of lime may be easily discovered. When the process by diminution of weight is employed, two parts of the acid and one part of the matter of the soil must be weighed in two separate bottles, and very slowly mixed together till the effervescence ceases, the differences between their weight before and after the experiment, denotes the quantity of carbonic acid lost; for every four grains and a quarter of which ten grains of carbonate of lime must be estimated.

6. After the calcareous parts of the soil has been acted upon by the muriatic acid, the next process is to ascertain the quantity of finely divided insoluble animal and vegetable matter, it contains. This may be done with sufficient precision, by strongly igniting in a crucible over a common fire till no blackness remains in the mass. It should be after stirred with a metallic rod, so as to expose new surfaces continually to the air; the loss of weight that it undergoes denotes the quantity of the substance that it contains destructible by fire and air.

It is not possible, without very refined and difficult experiments, to ascertain whether this substance is wholly animal or vegetable matter, or a mixture of both. When the smell emitted during the incineration is similar to that of burnt feathers, it is a certain indication of some substance either animal or analogous to animal matter; and a copious blue flame at the time of ignition, almost always denotes a considera-

able portion of vegetable matter. In cases when it is necessary that the experiment should be very quickly performed, the destruction of the decomposable substances may be assisted by the agency of nitrate of ammoniac, which at the time of ignition may be thrown gradually upon the heated mass in the quantity of twenty grains for every hundred of residual soil, it accelerates the dissipation of the animal and vegetable matter, which it causes to be connected into elastic fluids; and it is itself at the time decomposed and lost.

7. The substances remaining after the destruction of the vegetable and animal matter, and generally minute particles of earthy matter, containing usually alumina and silica, with combined oxide of iron or of manganesum.

To separate these from each other, the solid matter should be boiled for two or three hours with sulphuric acid, diluted with four times its weight of water; the quantity of the acid should be regulated by the quantity of solid residuum to be acted on, allowing for every hundred grains, two drachms or one hundred and twenty grains of acid.

The substance remaining after the action of the acid, may be considered as siliceous; and it must be separated and its weight ascertained after washing and drying in the usual manner. The alumina and the oxide of iron and manganesum, if any exist, are all dissolved by the sulphuric acid; they may be separated by succinate of ammonia, added to excess; which throws down the oxide of iron, and by soap lye, which will dissolve the alumina, but not the oxide of manganesum: the weights of the oxides ascertained after they have been heated to redness will denote their quantities.

Should any magnesia and lime have escaped solution in the muriatic acid, they will be found in the sulphuric acid, this however is rarely the case; but the process for detecting them, and ascertaining their quantities, is the same in both instances.

The method of analysis by sulphuric acid, is sufficiently precise for all usual experiments; but if very great accuracy be an object, dry carbonate of potassa must be employed as the agent, and the residuum of the incineration must be heated red for half an hour, with four times its weight of the substance, in a crucible of silver or of well baked porcelain. The mass obtained must be dissolved in muriatic acid and the solution evaporated till it is nearly acid; distilled water

must then be added, by which the oxide of iron and all the earths, except silica, will be dissolved in combination as muriates.

The silica, after the usual process of lixiviation, must be heated red; the other substances may be separated in the same manner as from the muriatic and sulphuric solutions.

This process is the one usually employed by chemical philosophers for the analysis of stones.

8. If any saline matter, or soluble vegetable or animal matter is suspected in the soil, it will be found in the water of lixiviation used for separating the sand.

This water must be evaporated to dryness in a proper dish at a heat below its boiling point. If the solid matter obtained is of a brown colour and inflammable, it may be considered as partly vegetable extract. If its smell, when exposed to heat, be like that of burnt feathers, it contains animal or albuminous matter, if it be white, crystalline, and not destructible by heat, it may be considered as principally saline matter.

9th. Should sulphate or phosphate of lime be suspected in the entire soil, the detection of them requires a particular process upon it, a given weight of it, for instance, four hundred grains, must be heated red for half an hour in a crucible, mixed with one third of powdered charcoal. The mixture must be boiled for a quarter of an hour, in a half pint of water, and the fluid collected through the filtre, and exposed for some days to the atmosphere in an open vessel. If any notable quantity of sulphate of lime (gypsum) existed in the soil, a white precipitate will gradually form in the fluid, and the weight of it will indicate the proportion.

Phosphate of lime, if any exist, may be seperated from the soil after the process for gypsum. Muriatic acid must be digested upon the soil, in quantity more than sufficient to saturate the soluble earths; the solution must be evaporated, and water poured upon the solid matter. This fluid will dissolve the compounds of earths with the muriatic acid, and leave the phosphate of lime untouched. Other earths and metallic oxides are now and then found in them, but in quantities too minute to bear any relation to fertility or barrenness, and the search for them would make the analysis much more complicated without rendering it more useful.

10th. When the examination of a soil is completed, the products should be numerically arranged, and their quanti-

ties added together, and if they nearly equal the original quantity of soil, the analysis may be considered as accurate. It must, however, be noticed, that when phosphate or sulphate of lime are discovered by the independent process just described (9) a correction must be made for the general process by substracting a sum equal to their weight from the carbonate of lime, obtained by precipitation from the muriatic acid.

In arranging the products, the form should be in the order of the experiments by which they were procured.—When the experimenter is become acquainted with the use of the different instruments, the properties of the reagents, and the relations between the external and chemical qualities of soils, he will seldom find it necessary to perform, in any one case, all the processes that have been described.—When his soil, for instance, contains no notable proportion of calcareous matter, the action of the muriatic acid (7) may be omitted. In examining peat soils, he will principally have to attend to the operation by fire and air (8); and in the analysis of chalks and loams, he will often be able to omit the experiment by sulphuric acid (9). In the first trials that are made by persons unacquainted with chemistry, they must not expect much precision of result. Many difficulties will be met with, but in overcoming them, the most useful kind of practical knowledge will be obtained; and nothing is so instructive in experimental science, as the detection of mistakes. The correct analyst ought to be well grounded in general chemical information; but perhaps there is no better mode of gaining it, than that of attempting original investigations. In pursuing his experiments he will be continually obliged to learn the properties of the substances he is employing or acting upon; and his theoretical ideas, will be more valuable in being connected with practical operations, and acquired for the purpose of discovery.

Plants being possessed of no locomotive powers, can grow only in places where they are supplied with food; and the soil is necessary to their existence, both as affording them nourishment, and enabling them to fix themselves in such a manner as to obey those mechanical laws by which their radicals are kept below the surface and their leaves exposed to the free atmosphere. As the system of roots, branches and leaves are very different in different vegetables, so they flourish most in different soils, the plants that have bulbous roots

require a looser and a lighter soil, than such as have fibrous roots; and the plants possessing only short fibrous radicles demand a firmer soil than such as have top roots, or extensive lateral roots.

In all cases the constituent parts of the soil which give tenacity and coherence are the finely divided matter; and they possess the power of giving those qualities in the highest degree when they contain much alumina.

Vegetable or animal matters, when finely divided, not only give coherence but likewise softness and penetrability, but neither they nor any other part of the soil must be in too great a proportion: and a soil is unproductive if it consist entirely of impalpable matters.

Pure alumina or silica, pure carbonate of lime, or carbonate of magnesia, are incapable of supporting healthy vegetation.

No soil is fertile that contains as much as 19 parts out of 20 of any of the constituents that have been mentioned.

It will be asked, are the pure earths in the soil merely active as mechanical or indirect chemical agents, or do they actually afford food to the plant. This is an important question; and not difficult of solution

The earths consist, as I have before stated, of metals united to oxygene; and these metals have not been decomposed there is consequently no reason to suppose that the earths are controvertible into the elements of organized compounds, into carbon, hydrogene, and azote.

Plants have been made to grow in given quantities of earth. They consume very small portions only, and what is lost may be accounted for by the quantities found in their ashes; that is to say, it has not been converted into any new products. The carbonic acid, united to lime or magnesia, if any stronger acid happens to be formed in the soil during the fermentation of vegetable matter which will disengage it from the earths, may be decomposed; but the earths themselves cannot be supposed convertible into other substances, by any process taking place in the soil.

In all cases the ashes of plants contain some of the earths of the soil in which they grow, but these earths never equal more than one 50, of the weight of the plant consumed.

If they be considered as necessary to the vegetable, it is as giving hardness and firmness to its organization. Thus, it has been mentioned that wheat, oats, and many of the hol-

low grasses, have an epidermis principally of siliceous earth; the use of which seems to be to strengthen them and defend them from the attacks of insects and parasitical plants.

Many soils are popularly distinguished as cold, and the distinction, though at first view it may appear to be founded on prejudice is really just.

Some soils are much more heated by the rays of the sun, all other circumstances being equal, than others; and soils brought to the same degree of cool heat, in different times *i. e.* some cool much faster than others.

This property has been very little attended to in a philosophical point of view, yet it is of the highest importance in agriculture. In general, soils that consist principally of a stiff white clay are difficultly heated; and being usually very moist, they retain their heat only for a short time, Chalks are similar in one respect, that they are difficultly heated; but being drier they retain their heat longer, less being consumed in causing the evaporation of their moisture.

A black soil, containing much soft vegetable matter, is most heated by the sun and air; and the coloured soils, and the soils containing much carbonaceous matter, or ferruginous matter, exposed under equal circumstances to sun, acquire a much higher temperature than pale coloured soils.—When soils are perfectly dry, those that most readily become heated by the solar rays likewise cool most rapidly; but I have ascertained by experiment, that the darkest coloured dry soil (that which contains abundance of animal or vegetable matter; substances which most facilitate the diminution of temperature) when heated to the same degree, provided it be within the common limits of the effect of solar heat, will cool more slowly than a wet pale soil, entirely composed of earthy matter.

I found that a rich black mould, which contained nearly one-fourth of vegetable matter, had its temperature increased in an hour from 65 to 88 degrees, by exposure to sunshine; whilst a chalk soil was heated only to 69 under the same circumstances. But the mould removed into the shade when the temperature was 62 degrees, lost, in half an hour, 15 degrees; whereas the chalk, under the same circumstances, has lost only 4 degrees. A brown fertile soil, and a cold barren clay were each artificially heated to 88 degrees, having been previously dried; they were then exposed in a temperature of 57 degrees, in half an hour the dark soil was

found to have lost 9 degrees of heat; the clay had lost only 6 degrees, an equal portion of the clay contain n: moisture, after being heated to 88 degrees, was exposed n a temperature of 55; in less than a quarter of an hour it wa found to have gained the temperature of the room. The soils in all these experiments were placed in small tin plate trays two inches square, and half an inch in depth, and the temperature ascertained by a delicate thermometer

Nothing can be more evident, than that the genial heat of the soil, particularly in spring, must be of the highest importance to the rising plants. And when the leaves are fully developed, the ground is shaded; and any injurious influence, which in the summer might be expected from too great a heat, entirely prevented: so that the temperature of the surface, when bare and exposed to the rays of the sun, affords at least one indication of its fertility, and the thermometer may be sometimes a useful instrument to the purchaser or improver of lands.

The moisture of the soil influences its temperature; and the manner in which it is distributed through, or combined with, the earthy materials, is of great importance in relation to the nutriment of the plant. If water is too strongly attracted by the earths, it will not be absorbed by the roots of plants: if it is in too great, or too loosely united to them, it tends to injure or destroy the fibrous parts of the roots.

There are two states in which water seems to exist in the earths, and in animal and vegetable substances, in the first state it is united by chemical, in the other by cohesive attraction.

If pure solution of ammonia or potassa be poured into a solution of alum, alumina falls down combined with water; and the powder, dried by exposure to air, will afford more than half its weight of water by distillation; in this instance, the water is united by chemical attraction. The moisture which wood or muscular fibre, or gum, that have been heated to 212 degrees, afford by distillation at a red heat, is likewise water, the elements of which were united in the substance by chemical combination.

When pipe clay, dried at the temperature of the atmosphere, is brought in contact with water, the fluid is rapidly absorbed; this is owing to cohesive attraction Soils in general vegetable and animal substances, that have been dried at a heat below that of boiling water, increase in weight by

exposure to air, owing to their absorbing water existing in the state of vapour in the air, in consequence of cohesive attraction.

The water *chemically combined* amongst the elements of soils, unless in the case of the decomposition of animal or vegetable substances, cannot be absorbed by the roots of the plants; but that *adhering* in the parts of the soil is in constant use in vegetation. Indeed there are few mixtures of the earths found in soils, that contain any chemically combined water; water is expelled from the earths by most substances which combine with them. Thus if a combination of lime and water be exposed to carbonic acid, the carbonic acid takes the place of water, and compounds of alumina and silica, or other compounds of the earths do not chemically unite with water; and soils, as it has been stated, are found either by earthy carbonates, or compounds of the pure earths or metallic oxides.

When saline substances exist in soils, they may be united to water both chemically and mechanically; but they are always in too small quantity to influence materially the relations of the soil to water.

The power of the soil to absorb water by cohesive attraction, depends in great measure upon the state of division of its parts; the more divided they are, the greater is their absorbent power. The different constituent parts of soils likewise appear to act even by cohesive attraction, with different degrees of energy. Thus vegetable substances seem to be more absorbent than animal substances, animal substances more so than compounds of alumina and silica; and compounds of alumina and silica more absorbent than carbonates of lime and magnesia; these differences may, however, possibly depend upon the differences in their state of division, and upon the surface exposed.

The power of soils to absorb water from air, is much connected with fertility. When this power is great, the plant is supplied with moisture in dry seasons; and the effect of evaporation in the day is counteracted by the absorption of aqueous vapour from the atmosphere, by the interior parts of the soil during the day, and by both the exterior and interior during night.

The stiff clays, approaching to pipe clays in their nature, which take up the greatest quantity of water when it is pour-

ed upon them in a fluid form, are not the soils which absorb most moisture from the atmosphere in dry weather. They cake, and present only a small surface to the air; and the vegetation on them is generally burnt up almost as readily as on sands.

The soils that are most efficient in supplying the plant with water by atmospheric absorption, are those in which there is a due mixture of sand, finely divided clay, and carbonate of lime with some vegetable or animal matter, and which are so loose and light as to be freely permeable to the atmosphere. With respect to this quality, carbonate of lime and animal and vegetable substances, are of great use in soils: they give absorbent power to the soil without giving it likewise tenacity: sand, which also destroys tenacity, on the contrary gives little absorbent power.

I have compared the absorbent powers of many soils with respect to atmospheric moisture, and I have always found it greatest in the most fertile soils; so that it affords one method of judging of the productiveness of land.

Water, and the decomposing animal and vegetable matter existing in the soil, constitute the true nourishment of plants; and as the earthy parts of the soil are useful in retaining water, so as to supply it in the proportions to the roots of the vegetables, so they are likewise efficacious in producing the proper distribution of the animal or vegetable matter; when equally mixed with it they prevent it from decomposing too rapidly; and by their means the soluble parts are supplied in proper proportions.

Besides this agency, which may be considered as mechanical, there is another agency between soils and organizable matters, which may be regarded as chemical in its nature.—The earths, and even the earthy carbonates, have a certain degree of chemical attraction for many of the principles of vegetable and animal substances. This is easily exemplified in the instance of alumina and oil; if an acid solution of alumina be mixed with a solution of soap, which consists of oily matter and potassa; the oil and the alumina will unite and form a white powder, which will sink to the bottom of the fluid.

The extract from decomposing vegetable matter when boiled with pipe clay or chalk, forms a combination by which the vegetable matter is rendered more difficult of decomposition and of solution. Pure silica and siliceous sands have

little action of this kind; and the soils which contain the most alumina and carbonate of lime, are those which act with the greatest chemical energy in preserving manures. Such soils merit the appellation which is commonly given to them of rich soils; for the vegetable nourishment is long preserved in them, unless taken up by the organs of the plants.—Siliceous sands on the contrary, deserve the term of hungry, which is commonly applied to them; for the vegetable and animal matters they contain not being attracted by the earthy constituent parts of the soil, are more liable to be decomposed, or carried off from them by water.

In most of the black and brown rich vegetable moulds, the earths seem to be in combination with a peculiar extractive matter, afforded during the decomposition of vegetables; this is slowly taken up, or attracted from the earths by water, and appears to constitute a prime cause of the fertility of the soil.

The standard of fertility of soils for different plants must vary with the climate, and must be particularly influenced by the quantity of rain.

The power of soils to absorb moisture, ought to be much greater in warm or dry countries, than in cold or moist ones; and the quantity of clay, or vegetable, or animal matter they contain greater. Soils also on declivities ought to be more absorbent than in plains or in the bottom of vallies. There productiveness likewise is influenced by the nature of the subsoil, or the stratum on which they rest.

When soils are immediately situated upon a bed of rock or stone, they are much sooner rendered dry by evaporation, than where the subsoil is of clay or mud; and a prime cause of the great fertility of the land in the moist climate of Ireland, is the proximity of the rocky strata to the soil.

A clayey subsoil will sometimes be of material advantage to a sandy soil; and in this case it will retain moisture in such a manner as to be capable of supplying that lost by the earth above, in consequence of evaporation or the consumption of it by plants.

A sandy, or gravelly subsoil, often corrects the imperfections of too great a degree of absorbent power in the true soil.

In calcareous countries, where the surface is a species of marle, the soil is oftener found only a few inches above the limestone; and its fertility is not impaired by the proximity

of the rock; though in a less absorbent soil, this situation would occasion barrenness, and the sandstone and limestone hills in Derbyshire and North Wales, may be easily distinguished at a distance in summer by the different tints of the vegetation. The grass on the sandstone hills usually appears brown and burnt up; that on the limestone hills, flourishing and green.

In devoting the different parts of an estate to the necessary crops, it is perfectly evident from what has been said, that no general principle can be laid down, except when all the circumstances of the nature, composition, and situation of the soil and subsoil are known.

The method of cultivation likewise must be different for different soils. The same practice which will be excellent in one case may be destructive in another.

Deep ploughing may be a very profitable practice in a rich thick soil; and in a fertile shallow soil, situated upon cold clay or sandy subsoil, it may be extremely prejudicial.

In a moist climate where the quantity of rain that falls annually equals from 40 to 60 inches, a siliceous sandy soil is much more productive than in dry districts; even the exhausting powers of crops will be influenced by like circumstances. In cases where plants cannot absorb sufficient moisture, they must take up more manure.

Soils appear to have been originally produced in consequence of the decomposition of rocks and strata. It often happens that soils are found in an unaltered state upon the rocks from which they were derived. It is easy to form an idea of the manner in which rocks are converted into soils, by referring to the instance of soft granite, or porcelain granite. This substance consists of three ingredients, quartz, feldspar and mica. The quartz is almost pure—siliceous earth, in a crystalline form. The feldspar and mica are very compounded substances, both contain silica, alumina, and oxide of iron; in the feldspear there is usually lime and potassa; in the mica, lime and magnesia.

When a granitic rock of this kind has been long exposed to the influence of the air and water, the lime and the potassa contained in its constituent parts are acted upon by water or carbonic acid, and the oxide of iron, which is almost always in its least oxided state, tends to combine with more oxygene; the consequence is, that the feldspar decomposes, and likewise the mica; but the first the most rapidly.

The feldspar, which is as it were the cement of the stone, forms a fine clay: The mica partially decomposed mixes with it as sand, and the undecomposed quartz appears as gravel, or sand of different degrees of fineness.

As soon as the smallest layer of earth is formed on the surface of a rock, the seeds of lichens, mosses, and other imperfect vegetables which are constantly floating in the atmosphere, and which have made it their resting place, begin to vegetate; their death, decomposition, and decay, afford a certain quantity of organizable matter, which mixes with the earthy materials of the rock; in this improved soil more perfect plants are capable of subsisting; these in their turn absorb nourishment from water and the atmosphere; and after perishing, afford new materials to those already provided; the decomposition of the rock still continues; and at length by such slow and gradual processes, a soil is formed in which even forest trees can fix their roots, and which is fitted to reward the labours of the cultivator.

In instances where successive generations of vegetables have grown upon a soil, unless part of their produce has been carried off by man, or consumed by animals, the vegetable matter increases in such a proportion that the soil approaches to a peat in its nature; and if in a situation where it can receive water from a higher district, it becomes spongy, and permeated with that fluid, and is gradually rendered incapable of supporting the nobler classes of vegetables.

Many peat mosses seem to have been formed by the destruction of forests, in consequence of the imprudent use of the hatchet by the early cultivators of the country in which they exist; when the trees are felled in the out-skirts of a wood, those in the interior exposed to the influence of the winds, and having been accustomed to shelter, become unhealthy, and die in their new situation, and their leaves and branches gradually decomposing, produce a stratum of vegetable matter. In many of the great bogs in Ireland and Scotland, the larger trees that are found in the out-skirts of them, bear the marks of having been felled. In the interior, few entire trees are found, and the cause is, probably, that they fell by gradual decay; and that the fermentation and decomposition of the vegetable matter was most rapid where it was in the greatest quantity.

Lakes and Pools of water are sometimes filled up by the accumulation of the remains of aquatic plants, and in this

case a sort of spurious peat is formed. The fermentation in these cases, however, seems to be of a different kind.—Much more gaseous matter is evolved, and the neighbourhood of morasses in which aquatic vegetables decompose, is usually aguish and unhealthy; whilst those of the true peat, or peat formed on soils originally dry, is always salubrious.

Poor and hungry soils, such as are produced from the decomposition of granitic and sandstone rocks, remain very often for ages with only a thin covering of vegetation. Soils from the decomposition of limestone, chalks and basalts, are often clothed by nature with the perennial grasses, and afford, when ploughed up, a rich bed of vegetation for every species of cultivated plant.

Rocks and strata from which soils have been derived, and those which compose the more interior solid parts of the globe, are arranged in a certain order; and as it often happens that strata very different in their nature are associated together, and that strata immediately beneath the soil contain materials which may be of use for improving it, a general view of the nature and position of rocks and strata in nature, will not, I trust, be unacceptable to the scientific Farmer.

Rocks are generally divided by geologists into two grand divisions distinguished by the names of *primary and secondary.*

The primary rocks are composed of pure crystalline matter, and contain no fragments of other rocks.

The secondary rocks, or strata, consist only partly of crystalline matter, contain fragments of other rocks or strata, often abound in the remains of vegetables and marine animals; and sometimes contain the remains of land animals.

The primary are generally arranged in large masses, or in layers vertical, or more or lesss inclined to the horizon.

The secondary rocks are usually disposed in strata or layers, parallell, or nearly paralell to the horizon.

The number of primary rocks which are commonly observed in nature are eight—viz:

Granite, Micaceous Schistus, Sienite, Serpentine, Porphyry, Granular Marble, Chlorite Schist, Quartzose Rock.

The secondary rocks are more numerous than the primary. They are Grauwackes, Siliceous Sandstone, Limestone, Aluminous Schist or Shale, Calcareous Sandstone, Basalt, or Whinstone, Bituminous or common Coal, Gypsum, Rock Salt, Chalk, Plum Pudding Stone, &c. &c.

The highest mountains in the old continent, are constituted by Granite; and this rock has likewise been found at the greatest depths to which the industry of man has as yet been able to penetrate; Micaceous Schist is often found immediately upon Granite, Serpentine or Marble upon Micaceous Schist; but the order in which the primary rocks are grouped together is various. Marble and Serpentine are usually found uppermost; but Granite, though it seems to form the foundation of the rocky strata of the globe, is yet sometimes discovered above Micaceous Schist.

The secondary rocks are always incumbent on the primary; the lowest of them is usually Grauwacke; upon this limestone or sandstone is often found; coal generally occurs between sandstone or shale; basalt often exists above sandstone or limestone; rock salt almost always occurs associated with red sandstone and gypsum. Coal, basalt, sandstone, and limestone, are often arranged in different alternate layers, of no considerable thickness, so as to form a great extent of country. In a depth of less than 500 yards, 80 of these different alternate strata have been counted.

The veins which afford metallic substances, are fissures more or less vertical, filled with a material different from the rock in which they exist. This material is almost always crystalline, and usually consists of calcareous spar, fluor spar, quartz or heavy spar, either separate or together.—The metallic substances are generally dispersed through, or confusedly mixed with these crystalline bodies.

The veins in hard granite, seldom afford much useful metal; but in the veins in soft granite, and in gneis, tin, copper and lead are found. Copper and iron are the only metals usually found in the veins in serpentine. Micaceous schist, sienite, and granular marble, are seldom metalliferous rocks. Lead, tin, copper, iron, and many other metals are found in the veins in chlorite schist. Grauwacke, when it contains few fragments and exists in large masses, is often a metalliferous rock. The precious metals, likewise iron, lead, and antimony, are found in it; and sometimes it contains veins in masses of *stone coal*, or coal free from bitumen.—Limestone is the great metalliferous rock of the secondary family; and lead and copper are the metals most usually found in it. No metallic veins have ever been found in Shale, chalk or calcareous sandstone, and they are very rare in basalt and siliceous sandstone.

In cases where veins in rocks are exposed to the atmosphere, indications of the metals they contain may be often gained from their superficial appearances. Whenever fluor spar, is found in a vein, there is always strong reason to suspect that it is associated with metallic substances. A brown powder at the surface of a vein, always indicates iron, and often tin; a pale yellow powder, lead; and a green colour in a vein denotes the presence of copper.

It is evident from what has been said concerning the productions of soils from rocks, that there must be at least as many varieties of soils as there are species of rocks exposed at the surface of the earth; in fact there are many more, independent of the changes, produced by cultivation and the exertions of human labour, the materials of strata, have been mixed together, and transported from place to place by various great alterations that have taken place in the system of our globe, and by the constant operations of water.

In ascertaining the composition of sterite soils, with a view to their improvement, any particular ingredient which is the cause of their unproductiveness, should be particularly attended to; if possible they should be compared with fertile soils, in the same neighbourhood, and in similar situations as the difference of the composition may, in many cases, indicate the most proper methods of improvement. If on washing a sterile soil it is found to contain the salts of iron, or any acid matter, it may be ameliorated by the application of quick lime. If there be an excess of calcareous matter in the soil, it may be improved by the application of sand or clay. Soils too abundant in sand are benefited by the use of clay, or marle or vegetable matter. A deficiency of vegetable or animal matter must be supplied by manure. An excess of vegetable matter is to be removed by burning, or to be remedied by the application of earthy materials. The improvement of peats or bohs or marsh lands, must be preceded by draining; stagnant water being injurious to all the nutritive classes of plants. Soft black peats, when drained, are often made productive by the mere application of sand or clay as a top dressing. When peats are acid, or contain ferruginous salts, calcareous matter is absolutely necessary in bringing them into cultivation. When they abound in the branches and roots of trees, or when their surface entirely consists of living vegetables, the wood or the vegetables must either be carried off or be destroyed by burning. In the last case there

ashes afford earthy ingredients, fitted to improve the texture of the peat.

The best natural soils are those of which the materials have been derived from different strata; which have been minutely divided by air and water, and are intimately blended together; and in improving soils artificially, the farmer cannot do better than imitate the processes of nature.

The materials necessary for the purpose are seldom far distant: coarse sand is often found immediately on chalk; and beds of sand and gravel are common below clay. The labour of improving the texture or constitution of the soil, is repaid by a great permanent advantage; less manure is required, and its fertility insured, and capital laid out in this way secures forever, the productiveness and consequently the value of the land.

ART. X.

An account of the proceedings of the Commissioners of "Water Works," appointed by the City Council of Charleston, for the procuring of pure water. Communicated by P. Moser, *M. D.*

TO THE EDITORS OF THE CAROLINA JOURNAL, &c.

Gentlemen,—The City Council of Charleston under an Ordinance passed on the 13th day of August, 1819, proceeded to the election of Commissioners of "Water Works" in March 1823, when P. Moser, M. D. John Strohecker, and Frederick Wesner, Esqrs. were elected. They commenced their operations of boring the earth in search of pure water, in the lot attached to the Poor House, on the 9th of April, 1823, and continued amidst difficulties that appeared insurmountable at the beginning, until the 9th of June, 1824, when they had penetrated the earth from its surface to the depth of 335 feet 4 inches, without obtaining the fountain of water expected. The lot on which the experiment was made, is computed to be about six feet above the level of the Ocean. The following is a summary of the Stratas.

The first seven feet presented the common yellow sand

and loam; thence to the depth of 19 feet, quick sand, making a most formidable resistance to the auger. Next foot red clay, making 20 feet; thence to 22 feet, Shells of various kinds, as oysters, clams, concks, and all the varieties of small shells, usually found on the sea beach, with some sand. From 22 to 27 feet a bright blueish colored mud with a small mixture of red clay. Thence to 35 feet, a firm and very tenacious blue colored clay, which on burning became the color of the gray brick. From 35 to 41 feet blue mud sand and various shells. From 41 to 43 feet, deep colored blue clay of very fine texture, and exceedingly tenacious; 43 to 46 feet calcareous earth, shells and white sand; 46 to 54 feet there appeared by the sudden sinking of the auger, a fissure or separation of the stratas; soft mud, water, and a little sand. 54 to 61 feet blue clay, calcareous earth, and some decayed wood so soft that it could only be ascertained by the appearance of its fibres. 61 to 67 feet a coarse sand or gravel of a blue color, which on exposure to air, became of a light ash color; when moistened with water it appeared to partake of the nature of quick sand, and evidenced the correctness of the conjecture, by making so much opposition to the sinking of our last iron tubes (which were six inches in diameter, and 4 and a half inches in the bore), that for every inch they descended, it filled in the bore about 3 feet, again to be bored out; this kept us at hard labour more than six months, when to the great gratification of the board of Commissioners, and relief of the labourers, on the 12th of June, 1824, the pipes settled firmly at 67 feet on a strata of olive colored clay marle, which when heated became of a white color; and so well preserved its arch as to render additional pipes unnecessary. The auger penetrated this strata with the greatest facility, which did not vary from 67 feet (its surface) to 223 feet 9 inches; here it appeared less tenacious, and on washing gave out one-tenth part of very fine white sand. From 223 ft. 9 inchs. to 253 feet, the strata the same, nearly with one-eighth part of sand. From 253 to 254 feet, calcareous earth and small stones so solid, that the auger was bent in penetrating it. From 254 to 263 feet white clay, Marl; here the auger rested on a hard carbonate of lime, which it could not penetrate; here also fresh water forced itself above the surface two feet, evidencing a new spring, and the hopes of the Commissioners were elated, but whether its course became changed, on penetrating the

lime strata, or it was not cleared sufficiently, is uncertain, but in a half of an hour it again subsided five feet. 263 to 264 feet solid carbonate of lime, which required a cast steel drill to penetrate, 264 feet 3 inches to 266 feet 3 inches soft mud; thence to 267 feet 3 inches, a hard carbonate of lime; thence 270 feet 6 inches a soft carbonate of lime. From 270 ft. 6 inch. carbonate of lime more hard than the last, particularly its crust or surface, but was penetrated by the augur alone. At 274 feet rested on a carbonate of lime so very hard, that it required the united efforts of six men to turn the drill upon it, aided by a lever above the surface, and a relief of six men who worked alternately one day before the drill broke through, its thickness was only six inches, but the drill sunk one foot deeper in a softer carbonate of lime. From 275 feet 6 inches to 279, a mixture of clay and mud, next a hard carbonate of lime only 5 inches thick, 282 feet 11 inches to 287 feet 4 inches, clay and mud, thence to 289 a hard carbonate of lime as above. From 289 feet 4 inches to 291 feet 9 inches, softened clay, lime and some sand; thence to 293 feet 4 inches, thick hard lime as above, ballance same but softer, 293 feet 4 inches to 295 feet 9 inches, crust 9 inches thick, remainder mixture of soft carbonate and mud 295 - 9 to 297 - 6, soft lime as above; thence to 300 - 8, first foot, hard lime stone, balance mud, one small piece of the lime stone was here brought up with the augur, not having been acted on by the drill, remainder mud, 300 - 8 to 302, hard lime stone, 302 to 308 - 5 soft carbonate of lime; next 6 inches hard crust 308 - 11 to 311 soft carbonate and mud, 311 to 314 - 3 first foot lime, balance a very tenaceous clay and soft lime 314 - 3 to 317 - 2 shello, marle, sand clay, and some thick solid marine shells broken, 317 - 2 to 331 blue lime stone rock, 331 to 334 chalk, clay, mud: thence a solid lime-stone rock to 335 - 4 which was not drilled through; when in consequence of the cap screw of the iron rods giving, being much worn, the rods were in part precipitated to the bottom and until recovered must prevent any further progress at least in this spot.

I forbear commenting on the above experiment, my sole object being the statement of plain facts leaving them in the hands of speculative men of science. I will only add that the greatest depth below the surface ever obtained in Charleston previous to this experiment, was only 54 feet.

Yours, &c. P. MOSER.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

DOMESTIC INTELLIGENCE.

Medical College of South-Carolina.—This institution (a prospectus of which was published in the different periodical works of the U. States) was opened on the 1st Monday of November last.

The number of Students which attend this infant institution (between 40 and 50) far exceeds the most sanguine anticipations, and is an evidence of the strong disposition which the people of the South have to encourage institutions of their own. All institutions must by degrees gain public confidence, and we look forward with pleasure to the progressive rise of this College Its rapid advancement however must depend not only upon its Professors, but upon the cooperation of Medical Men, and the State. An institution of this kind is in some degree identified with the reputation of the State and should be made equal in all respects with any institution in the U. States.—*Editors.*

Dr. Logan, of this city has just published a medical work entitled 'practical observations on the diseases of Children." His opportunities of observing and becoming acquainted with the diseases of children have been certainly great, having been many years Physician to the Orphan-House, where upwards of 180 children reside. We most cordially wish the work extensive circulation, especially among those who cannot readily obtain medical aid for whom we believe it was more particularly written. We regret it was published too late to receive a more particular notice in this number.—*Ib.*

FOREIGN INTELLIGENCE.

M. Magendie has lately published two very interesting remarks on the use of the first and fifth pair of nerves. It appears from the result of the experiments of this great Physiologist, that the first pair is not the organ of smell; and that the fifth pair presides in this sense as well as in vision, hearing, taste, and sensibility of the parts where it is distributed in fact that in these nerves reside all the senses. He has also observed that their section is soon followed by an acute inflammation of the globe of the eye, and a complete insen-

sibility of the part inflamed. The nostrils, the mouth and tongue also experience, remarkable alterations. As soon as M. Magendie's experiments are terminated, we will offer them with details.—*Editors.*

At a meeting of the Royal Medical Academy of Paris, Professor Beclard, presented in the name of Messrs. Dubois and Bellivier, a fœtus which had remained seven years in the uterus. This fœtus, of the female sex is full grown; and was contained in a bag situated on the left side of the uterus. It is said to be changed into a substance similar to the fat of dead bodies.—*Arch: Gen: de Med. Mai*, 1824.

A uterus divided into two cavities by a partition in its centre, has lately been found by M. West. The woman who furnished this specimen of pathology was pregnant with a male child which developed in the left cavity resulting from the division.—*Arch. gen. de Med. Juillet* 1824.

The following remarkable case was observed at the Hospital la charite in Paris, by M. Serres. An epileptic patient, in consequence of an inflammation of the right eye, with constriction of the pupil and opacity of the cornea, had lost his sight on that side. Six months afterwards, in the beginning of August, it was perceived that the conjunctiva was so insensible, that the feather of a quill could be passed between the eye-lids and the globe of the eye without being felt. The right nostril was also without feeling, and he could scarcely hear on that side, the sulphate of quinine, when applied to the right side of the tongue, was not tasted, the gum on the same side was soft, fungous, black and loose from the bones; almost all the teeth were carious, and many had dropped from the alveolars; the gums on the left side were also diseased, but in a slighter degree. This patient died in a few days in consequence of chronic affection of the Ancepholis which had disorganized a great part of that viscera without producing any remarkable phenomena. At the opening of the body, which was done in the presence of Messrs. Serres, Magendie, Lisfranc, Georget, and a number of Students, it was observed that the fifth pair of nerves on the right side was much altered. At its origin it was soft, yellow, and nearly gelatinous; this matter extended a line or two in the medulla oblongata; the nerve could be traced higher up; but no change in its colour or consistence was remarked.—In extracting the brain, the nerve had been unintentionally broken. The portion which extended beyond the posterior

pars petrosa, had the same soft and yellow appearance, with the exception of its muscular fibres which were perfectly healthy. On the pars petrosa and in front of the plexus, the nervous fibres were divided by an infiltration of serum, but had retained their natural consistence. The ganglion was yellow and projected in a manner unobserved on the opposite side. In measuring the side of the nerves of both sides on the pars petrosa; it was found that those of the left which were healthy, were four lines and a half wide, whilst those of the right were only three. The anterior chamber of the eye had disappeared from the adhesion of the cornea to the iris. This coincidence of the lesion of the fifth pair of nerves, with the affection of the eye and the gums, the loss of the action of the senses, becomes very interesting, because it coincides with the results obtained by M. Magendie, by the section of those nerves. A circumstance which ought not to be forgotten, is that in this patient, the muscular fibres of the diseased nerve were healthy, and mastication not prevented. We hope M. Serres, will soon publish this observation at full length with remarks.—*Arch. gen. de Med. Aout*, 1824.

Extract of Digitalis.—This has been obtained in a highly concentrated state by M. Royer, in the following manner. The dried plant is digested in ether, afterwards filtered and the solution evaporated. The residue is redissolved in water treated with the solution of oxide of lead, again digested in ether and evaporated. The residue is a brown substance (the extract) intensely bitter, very deliquescent and difficult to crystallize. Its sedative powers are very great. One grain was dissolved in 200 grains of water, and thrown into the abdomen of a rabbit. The circulation rapidly diminished and the animal died, evincing neither pain or spasmodic action. Half a grain dissolved was injected into the veins of a cat, when death ensued in 15 minutes. A grain and a half inserted into the jugular veins of a dog, produced death in five minutes. The arterial blood of all the animals exhibited the deleterious agency of the medicine, both in color and consistence.—*Bib. Univ.*

Test for Nitrous Oxyde.—Dr. Henry of Manchester, recommends the following test. A given volume of the nitrous oxide, is to be exploded with a slight excess of Carbonic oxide of known purity, say 100 volums of the former to 110 volumes of the latter. Now as each volume of nitrous oxyde, gives under these circumstances an equal velume of

carbonic acid, we may impute whatever carbonic acid is deficient of that proportion, to the mixture of so much nitrogen with the nitrous oxide Thus if in the combination in place of 100 of carbonic acid, there should be only 95, the 15 deficient may be accounted for from the presence of so much nitrogen. Any nitrous gas may be previously separated by a solution of green sulphate of iron.

Method of distinguishing positive from negative Electricity. M. Berzelius, observes that when the electric current passes by means of a point to the tongue, the *positive* is acid, and the *negative* caustic acid or rather *Alkaline.*

Inflammation of Sulphurated Hydrogen, by Nitric Acid.—M. Burzelius, has found that if a few drops of the Nitrous acid be poured into a flask containing four or five cubic inches of Sulphuretted hydrogen gas, and the flask be closed by the finger, it becomes so warm as to produce combustion with a beautiful flame, and a slight detonation, which forces the finger from the mouth of the flask. It is necessary that the acid should be very pure and the gas free from aqueous vapour.

Benzoic acid in oil of Dahlia.—M. Payen, in experimenting on the essential oil obtained from the dahlia, found a cristallizable substance perfectly analogous to the Benzoic acid.

Preserving of Birds &c.—Mr. Femminck director of the dutch museum has for many years preserved birds and quadrupeds, from the attacks of minute insects, by placing a small wooden basin containing tallow in each case, which he finds to be more effectual than either camphor or Russia leather.

Edin. Phil. Journal.

Medical Remains at Pompeii.—M. Choulant has lately published at Leipsic, in a pamphlet entitled " De Locis, pompeiianis ad Rem medicam facientibus," an account of different objects relating to the medical art, discovered at Pompeii M. C. successively describes the Temple of Esculapius, the amulets, surgical instruments, pharmaceutical apparatus &c. found in the midst of the ruins. Amongst the surgical instruments, were some found nearly resembling those made use of at the present day, such as elevators for the operation of trepanning, Lancets, Spatulœ, instruments for the application of actual cautery &c. There has been no building as yet found which could be regarded as a School of Surgery or as containing an anatomical Museum.—*Edin. Phils. Journal.*

THE

CAROLINA JOURNAL

OF

MEDICINE, SCIENCE AND AGRICULTURE

CONDUCTED BY

THOMAS Y. SIMONS, M. D.

AND

WILLIAM MICHEL, M. D.

OPINIONUM COMMENTA DELET DIES, NATURÆ JUDICIA CONFIRMAT.
Cic. de Nat. Deor.

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DISTRICT OF SOUTH CAROLINA.

BE IT REMEMBERED, that on the twenty second day of January, Anno Domini, one thousand eight hundred and twenty five, and in the Forty ninth year of the Independence of the United States of America, Thomas Y. Simons M. D. and William Michel, M. D. deposited in the Office, the title of a Book, the right whereof they claim as authors and proprietors, in the words following to wit:

"The CAROLINA JOURNAL of Medicine, Science and Agriculture, conducted by Thomas Y. Simons M. D. and William Michel, M. D.—*Opinionum commenta delet dies, naturæ judicia confirmat.*—Cic. de Nat. Deor."

In conformity with the act of Congress of the United States, entitled "An act for the encouragement of Learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies during the times therein mentioned," and also An act entitled "An act supplementary to An act, entitled "An act for the encouragement of Learning, by securing the copies of maps, charts and books, to the authors and proprietors of such copies, during the times therein mentioned" and extending the benefits thereof to the arts of designing, engraving and etching, historical and other prints.

JAMES JERVEY.

District Clerk, S. C. D.

TO OUR READERS AND CORRESPONDENTS.

WE must beg the indulgence of our Subscribers for the unavoidable delay of our second number, and promise in future greater punctuality. At the same time we thank the public for the kind reception of the first number, and are happy to say its circulation is gradually extending.

We have received several Communications, and an Essay for the Medical Prize Question, having the motto—

> "*The evil that men do, lives after them ;*
> *The good is oft interr'd with their bones.*"—SHAKESPEARE.

which shall be attended to. Least there should be some mistake, we beg leave to say, we shall be happy to receive Communications not only on Medicine and Agriculture, but likewise on Science, including Natural History and the Arts.

We some time since published in the Newspapers of this city, the following Advertisement:—

PRIZE QUESTIONS.

The Editors of the *Carolina Journal of Medicine, Science, and Agriculture*, sensible of the encouragement given to this effort to draw forth the researches and improvement of their Southern countrymen, and desirous of extending the usefulness of their work, respectfully offer TWO MEDALS, of the value of *Twenty Dollars each, or a set of Books of that value*, at the option of the successful candidates, for the best Essays on the following subjects:

MEDICINE—On the Bilious Remittent Fever.

AGRICULTURE—On the best method of Draining Marsh and Swamp Lands, and fitting them for cultivation.

Each Essay must be accompanied with a sealed letter containing a motto corresponding with that of the Essay, and the name of the author; to be sent to the Editors (post paid) on or before the 1st of November, 1825.

A Committee of three impartial and competent judges will be appointed on each of the questions. All the letters, except those of the successful candidates, will be burnt, and the Essays disposed of according to the wish of the authors. The Essays of the successful candidates will be published in the Journal.

Our next number will be published on the 15th of July—All Communications for that number must be sent early.

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ART. I.

ESSAY ON VARIOLA OR SMALL-POX.

BY WILLIAM MICHEL, M. D.

Salus populi suprema lex esto—*Hen.*

History of the Disease.

It is not probable that the Greeks and Romans had any knowledge of the Small-pox. Some commentators however have thought that they discovered traces of this malady in the luminous writings of Hippocrates and Galen. It is true that the author of the sixth book of epidemics mentions a disease of the skin peculiar to children, and characterized by large red pustules, the repercussion of which occasioned convulsions, epileptic fits and death; but any reflective and candid mind will readily acknowledge, that this incomplete description does not allude more especially to the Small-pox, than any other cutaneous affection.

Authors such as Hippocrates, Aretœus, Celsus, Galen &c, who succeeded so admirably in the delineation of diseases, that their descriptions may rather be looked upon as finished paintings than histories; would not have failed to represent the one under our consideration, (if it had existed in their day,) so as to secure us from error.

Of all the Physicians of antiquity, Galen would have had the most frequent opportunities, of observing the Variola. He travelled through all the Roman Empire, and successively visited Asia Minor, Greece and Egypt. Multitudes every where attracted by his extraordinary skill, and the supposed magic of his cures, eagerly hastened to him for relief. If therefore the Small-pox had existed, he would have seen

and described it; but in all his writings there is not a single description which can be taken for this disease.

Historians also like the pure and energetic Thucydides, would have mentioned it as a pest (1) which had desolated some country or town, leaving the marks of its ferocity.—From our knowledge of the polytheism of the ancients. it is nothing but rational to conjecture, that terrified at the direful consequences of the Small-pox, they would have erected temples or statues to it as to other evil divinities (2). If the pages of history, and the monuments of antiquity are dumb on the subject, we cannot but conclude that the Variola was unknown in those remote ages.

Moreover, if we go back to the etymology of the word Variola which is of modern origin, it will furnish us with an almost incontrovertible evidence of its being a new disorder, for when a thing has a name which cannot be found in any ancient language, it is the strongest proof that can be adduced to demonstrate its novelty. Thus Pliny wishing to prove that the Gout was a new disease in Italy, gives no other reason, but that it had no name in the latin language.

According to Bruce (3), the siege of Mecca must be considered as the epoch of the first appearance of this dreadful malady which began in the year 569. The Abyssinian army fell a sacrifice to it during the war of the elephant. The Small-pox grew familiar among the Arabians, and accompanied them in all their conquests. It broke out in Egypt in 634, the time of its invasion by the Caliph Omar, the successor of Mahomet, from hence it overrun Syria, Mesopotamia and Persia, reached the oriental part of Asia; and by communication extended to China, Tartary, Kamtchatka, &c. &c.

In the seventh century it desolated Gaul and Italy, where it raged several times accompanied with Diarrhœa and Dysentery. In the eighth century the victorious Saracens carried it from the coast of Africa to Europe, (where it

(1.) The name of pest, was originally given to every fatal epidemic.

(2.) In the Kingdom of Golconda they worship an Idol, to which is attributed the power of producing diseases, particularly the Small-pox. It is represented by the figure of an ematiated woman, or rather a fury; with two heads and four arms. Tavernier, Chardin, and some English travellers, were obliged to spend a night in the temple dedicated to small-pox, and make their offerings to the Idol.

(3.) Travels to the source of the Nile.

had already been,) when they made themselves masters of Spain, Sicily, Naples and Narbonnesian Gaul.

In subsequent ages pregnant with great events, the propagation of the Small-pox was accelerated by great political commotions that precipitated nations against one another; such as the incursion of the Barbarians from the North, the Crusades in the East, the taking of Constantinople; and the discovery of America by Columbus. Fernando Cortez transported it to Mexico, the English to South America Canada and Greenland; and the Hollanders to the East Indies and Cape of Good Hope.

The Small-pox thus carried in the four quarters of the globe, extended from country to country, and in our days there is scarcely an inhabited spot but what has been subject to its unmerciful ravages. If the Arabians were the first to experience the disastrous effects of this disease, they were also the first to speak of it; particularly Rhazes. Constantine surnamed Africanus, first gave the name of Variola to the pustule alone. Since, this word has been used to designate the disease itself. The Italiens call it Variola, the Spaniards Las Virulas, the Germans Pocken, the French Petite-Verole and the English Small-pox.

Preliminary Remarks.

The Small-pox is a formidable cutaneous disorder, highly inflammatory and contagious in its nature, which generally afflicts man but once in his life. It is preceded by chill, fever, pain, itching; and characterized by pustules, semi-spherically raised, containing at first a transparent fluid which soon becomes thick, purulent, concreted, and finally scabbs off; its ordinary duration is from fourteen to twenty-one days. This phlegmasia is sometimes superficial, and sometimes affects the whole thickness of the integuments, when the muscular system shews signs of inflammation and suppuration.

This disease generally begins with the vernal equinox, increases in summer, declines in autumn and disappears in winter. This however is not always the case, as it is sometimes stationary for years.

In large cities such as London, Paris, Naples, &c. &c, the Small-pox is never entirely destroyed, it reigns periodically every year; sometimes even twice in twelve months. These epidemics are very fatal in their commencement, but grow

much milder towards their termination. Generally speaking, the longer they are in making their appearance in any place, the greater are their ravages: owing we may believe, to the neglect of our safeguard, vaccination (1).

All that has been said varies according to climates, localities, and the state of the atmosphere which frequently developes this disease, and causes it to take place in all seasons; even in those which are considered the finest and healthiest.

Few are exempt from the Small-pox, all must sooner or later experience its effects, unless the predisposing or innate germ if existing, is destroyed by vaccination. Women are more liable to it than men, children than adults; and these last, more than the advanced in age, whose stiff fibres and dermoid system resist the absorption of the pestilential vapour. Independent of age and sex, inflammatory constitutions, those who are subject to epistaxis, ophthalmia and eruptive diseases, are particularly exposed to the Variola.—The above remark is also applicable to those who make too free use of wine. Sinopius observes that there are colonies among the Tartars, that feed only on meat and milk, which are destroyed by the scurvy; but are entirely exempt from the Small-pox.

In countries situated near the burning sun of the Equator,

(1.) Here arises a question concerning an eruption which has lately made its appearance in different parts of Europe and whose resemblance to the Small pox, has caused the preventive power of vaccination to be much questioned: but as every thing respecting it has been so very ably discussed in the learned researches of Dr. Hennen and the extended and laborious inquiries of the acute and judicious Dr. Thomson; I might occupy pages on the subject, without disclosing any facts hitherto unknown. I shall therefore only remark that the eruptive disease alluded to, now prevails in our city, as it has done invariably in England, France and elsewhere, together with the Small-pox; and as far as my opportunities have been of observing the disorder, very few protected persons have yet taken it, and it has generally been in the very mildest possible form. When it has deviated from this benign character, the progress of cutaneous inflammation has been checked at so early a period, that the fluid contained in the vesicles has seldom reached the state of pus, the cutis has not been ulcerated, and consequently in place of a pustule been formed, nothing more than a tubercule is observed which soon scabbs off, and as the occurrence of this eruption in those that have been vaccinated has excited no inconsiderable degree of fear; and might have the injurious tendency to limit the confidence of the public in the preventive properties of vaccination; I think it proper to state that the cases which I have met with in my practice and three in particular in my family, far from lessening in my opinion the value of vaccination; have induced me to be more than ever convinced of its modifying powers, and as every thing tending to elucidate the question and quiet the public mind, must be acceptable to our readers, I take this opportunity of inserting the following note of my friend Dr. Simons, who had the advantage of seeing the first cases that appeared in this city.—

In Dec. 1824, the Barque Caledonian arrived from Belfast, having between 80 and 90 steerage passengers on board. On visiting this vessel, I found an eruptive disease prevailing, which resembled Chicken-pox, and which I at first thought was that disease; —but on removing those patients, and those whom I deemed susceptible to small-pox, to Quarantine, I was surprised to discover that two cases which were unprotected, had received the genuine Small-pox. They had the preceding fever on the fourth day the eruptions came out simultaneously and in the case which recovered, (one having died

the infection is more rapid, and the eruption takes place easier, and in greater abundance than in cold climates; accordingly, the Egyptians, Ethiopians and negroes, are more easily affected than any other inhabitants of the earth.

It has been a subject of doubt and curiosity, whether a person can be twice attacked with this disease, but we have pretty authentic proofs of its having occurred on the coasts of Malabar, and in Egypt; even as often as three times.—Sarconne says that he has seen at Naples, persons more than once affected even with the confluent Small-pox, and observes that this is not uncommon, "*non e' rarissimo.*" Forestus's son sufferred twice under it. Rosen asserts on the contrary, that in Sweden, he has never seen the Small-pox twice in the same individual. It is for the same reason that the Variola spread with difficulty in the more Northerly countries, such as Lapland, Norway and Russia, where it was unknown until the fourteenth century. As in the above latitudes it is so little contagious, that old persons can scarcely take it, there also the eruption is more painful and the disease more dangerous.

on the 7th day,) the pustules maturated on the 9th, and began to dry on the 11th, and every strongly marked symptom characteristic of Small-pox appeared.

The important fact is, that the genuine and virulent Small-pox should be communicated from a disease in the vaccinated, seemingly so mild, and which resembled varicella, and of which I should have had no doubt, had not this circumstance taken place. This disease was precisely similar to what we denominate varioloid, which is now prevailing in Charleston.

The following is a Summary of my observations of this disease as it occurred among the passengers of the Caledonian. 1st. Not one who has been inoculated with, or had the Small-pox naturally, took this eruption, although there were more than twenty of this class, but what is more strange, the child that died of the Small-pox, (or Varioloid, as some who consider it a distinct disease assert,) was nursed by, and slept with the mother, who had the Small pox naturally, and she had not the disease. 2nd. Those who were vaccinated, had a disease mild in its Character, resembling varicella. I am not certain, but it is my impression that all of this class were not affected. 3d. Those who were unprotected viz had neither the vaccine or Small pox, took the genuine Small pox, in an aggravated form, of which one died.

I shall not enter into the merits of the doctrines advanced regarding the distinctive character of Varioloid, further than remarking that if it were a distinct disease, it should affect indiscriminately all who have been vaccinated or inoculated, which has not been the case in any Country, where it has prevailed; nor shall I say any thing of the contest between Dr Thomson and others, regarding the identity of Varioloid and Varicella, but content myself with observing that from what I have read and seen, I am more fully confirmed in the value of Vaccine. The disease appears so mild generally in those who are vaccinated, that it would appear very little less than rashness to inoculate with (Varioloid) or Small pox, more properly speaking, and thus run the doubtful chance of engendering a dangerous, contagious and aggravated disease. In the comparatively few cases in other Countries, which have been reported of those who were inoculated with Small pox, having had this Varioloid, I would remark that I would attribute such cases either to a deviation from a general law, which cannot impair it; or their having been inoculated from aggravated cases of Chicken pox, which were selected as mild cases of Small pox For my part, I humbly conceive that varioloid is nothing more than Small pox modified by vaccine, notwithstanding the opinions of many others to the contrary.

THOS. Y. SIMONS, *Port Physician.*

Warm and damp weather is most favourable to its propagation, and Spring more propitious to it than Autumn and Winter.

The Small-pox may be communicated by mediate or immediate contact. By the immediate contact, the person infected imparts it to the one in health, and the more easily during the stage of suppuration. The disease can be communicated from the mother to the child during pregnancy, as there are cases on record: the contrary may also take place, that is to say, the mother may labour under the disorder without communicating it to the fœtus. "Exemplum mulieris, quœ tempore graviditatis in variolas incidit, infanti ab iis in utero primum et dein etiam post partum, satis diu libero manente, correptoque iis tantum post spatium aliquot annorum elapsum. (Philos: Trans.) Most wonderful facts have been recorded by Mead, Mauriceau and others, showing the possibility of the child's contracting the disease in utero, notwithstanding the mothers being exempt from the disorder both during pregnancy and after confinement.—The case mentioned by Mead, is too well known to need our transcribing it.

By the mediate contact, the Small-pox can be transmitted by a number of objects. Linen, silk, woolen, and cotton stuffs, wood, metal and glass, once impregnated with the variolous poison, retain for a length of time its contagious properties; but the air is the vehicle most propitious to its propagation. Dr. Haygarth and others assert that the disease cannot be communicated to a great distance through the air: but as they do not bring any satisfactory proof to strengthen their assertions, I am inclined to believe with other eminent writers, that the miasma may be conveyed to a very great distance according to the direction of the wind; and in this way alone, can we account for the great number of persons taken with the disease at the same time, and in the same place. From hence it is that the Small-pox is almost always epidemic and rarely sporadic. Some authors say that in Egypt it is epidemic as is the plague.

The Variolous miasma disseminated through the atmosphere, has not always a deleterious effect; its diffusion becomes harmless if the body is not particularly predisposed to receive it. When this is the case, the most repeated contact and even inoculation will fail of producing the disease. It is probably owing to this state of the system, that the disor-

der is so much more fatal in one person than in another.

The poisonous vapour is absorbed by the surfaces exposed to the contact of the air, (1) and carried into the circulation where it mingles with our humours and remains sometimes without producing any obvious disturbance in the functions. A reaction commences by a slight febrile action whose duration is in proportion to the vital powers, and sometimes the eruption is not apparent before the tenth or twelfth day; owing to old age, exhaustion or hardness of the skin. This is what has made some writers falsely believe that it was not uncommon to see the Smoll-pox succeed the typhus fever.

The variolus virus, although always identic in its nature, does not always produce the same effects; for at one time it occasions the distinct, and at another the confluent Small-pox. It is more active in some epidemics than in others. Each epidemic has some particular feature which makes it differ from every other. These differences not only depend upon the susceptibility of the disease, and the irritability of the person affected; but also on the concomitant fever which is not always of the same nature, or some complication with other prevailing diseases, or on the constitution of the atmosphere, or other causes which it is impossible for us to discover; accordingly the Variola is either regular or irregular, benign or malignant.

The specific nature and modus operandi of the variolus poison is not yet known. It is thought by a modern chymist to have a great affinity to arsenic, from his having observed pustules and other symptoms perfectly analogous to those of the Small-pox, in persons who had drank wine, which had been clarified with arsenic, and in a child who had inhaled an arsenical vapour.

I will not here revive the theories of the Physicians of the middle age, on the innate germ, the fermentation of the humours and their purulent degeneration in the Small-pox. It is sometimes impossible for phylosophy to explain a series of phenomena, the perfect knowledge of which it is beyond the sphere of human intelligence to attain. This mania for explaining every thing, has often fettered the science of medicine. It is more beneficial to mankind to study the natural

(1.) . . . . . Suspensa manet vis aere in ipso,
Et quum spiranteis mistas hinc ducimus auras,
Illa quoque in corpus pariter sorbere necesse est.—*Lucret.*

course of diseases, their characteristic symptoms, their stages, their termination and the best mode of treatment sanctioned by experience.

We have at present acquired from observation, such a degree of precision in medicine, that we can no longer consider with some authors, the colour and the nature of the matter contained in the pustules, as sufficient reasons for dividing the disease in so many varieties; for instance, into horny, crystallized, vesicular, purulent, and scorbutic Small-pox.—Such divisions in fact can have no material influence either on the distinctive character of the disease, its progress or mode of treatment.

Some authors only regarding the eruption, have divided the Small-pox into discrete or distinct, when the pustules are few and the eruption progresses with regularity; and into confluent, when the pustules are so numerous that they appear to run into each other. Mead and others on the contrary, directing their attention to the apparent state of the vital powers, have called it benign when the febrile symptoms are slight and the strength not much impaired, and malignant when the fever is violent, exhibits a synochous or typhous type, and the patient is entirely exhausted.

But these varieties far from differing essentially, should only be considered as so many degrees of the same disorder depending on the greater or less tendency to cutaneous inflammation or to the irritability of the internal viscera. We might with as much reason, consider the various degrees of inflammation in the whitlow as establishing as many species of the disorder. A principle of nosology evidently absurd. However, I will retain the distinction of discrete and confluent, because the disease is generally so divided.

After these precursory remarks on the disease under consideration, I shall now proceed to the exposition of its symptoms.

Of the distinct Small-pox, or Variolæ discretæ.

From the days of Rhazes, to those of Sydenham, no one has remarked the different stages peculiar to the Small-pox; a circumstance which plainly shews the difference between seeing diseases and observing them. The Variola does not always follow in its commencement the type traced by Sydenham. The description of this disease however, may justly be considered as the chef-d'œuvre of the English Hip-

pocrates. He distinguishes two stages, Doctrs. Thomas, J. M. Good and others, four periods; but I will consider it under five distinct stages.

1. *Latent Stage.*—By this is to be understood, the interval which elapses between the instant the miasma is introduced into the system by natural contagion, and the appearance of the first symptoms of the disease. The duration of this period is in inverse ratio to the activity of the variolous poison, and is supposed to be shorter in the inoculated, than in the casual Small-pox. But authors do not agree as to the duration of the latent stage in natural Small-pox, which must depend not only on the activity of the variolous virus, but also on the predisposition of the person who feels its influence; and it is on account of this predisposition which modifies the action of the virus, that it happens that the Variola communicated at the same time to a number of persons, displays itself sooner and occasions greater ravages on some than on others. Those who carry the germ of this disease, appear well during the latent stage which Boerhaave and Stoll believed to be a period of six or seven days, and more modern authors have estimated from five to twenty-one, and even twenty-four.

2d. *Stage—Febrile Action.*—The distinct Small-pox is sometimes so mild, that the eruption takes place without any precursory symptoms, and the disease proceeds through all its other periods, without any perceivable febrile action, and without confining the patient to his bed, disturbing his sleep or diminishing his appetite: but things do not always take such a satisfactory turn.

The disease is most commonly announced by anorexia, langour, and slight faintness. The eyes are red and tearful, the patient is melancholy, yawns frequently, has slight fits of cold and heat and finally a decisive ague, accompanied with pains in the head, chest, back, loins, &c. &c. and followed by a hot fever which generally lasts three days, and is attended on the second with nausea and vomiting. The third day the patient feels an itching in his nose, his eyes are glistening, his tongue red, and a sensation of burning heat is felt in the throat and stomach, which occasions a great thirst and a desire for acid drinks, the urine is red, scarce, or entirely suppressed: there is a tendency to perspiration in adults, and to drowsiness in children. These symptoms remain thus until the end of the third day, at which time the eruption

being near, they assume a more alarming aspect. The fever becomes violent, the pulse full and quick, and the respiration laborious. It is also at this period, that hœmorrhages of the nose, uterus &c. &c. are to be observed in adults, and delirium, convulsions and epileptic fits in children: These last symptoms are said by Sydenham to presage a Small-pox of benign character, and by Mead and others to be more frightful than dangerous; but I have reason to believe, not only from the authority of Dr. Good, but from the result of my own experience, that those alarming symptoms have not sufficiently occupied the attention of Physicians. The redness of the skin is very intense, particularly about the facies; and a burning heat, and an intolerable itching as if pricked with pins felt all over the body, announce that the eruption is going to take place. Children sometimes incline to diarrhœa from this moment, and adults experience abundant sweats.

The fourth day although admitted by Sydenham to be that of the eruption, is contradicted by Cullen who asserts that among more than a thousand cases of Small-pox, that he has attended, he has never seen more than six, in which the eruption was retarded to the fourth day: but this apparent diversity of opinions, may I think be accounted for, if we remember that Cullen's patients were mostly children, while those of Sydenham were generally adults.

3d. Stage—Eruption.—When the disease progresses with regularity, the eruption takes place on the fourth day, sometimes sooner, but seldom later; and is manifested by little, red, and insulated specks similar to flea-bites. They are first to be seen about the legs, forehead, neck, chest, arms and hands; and then on the back, thighs, legs and feet. They seldom appear on the abdomen or the soles of the feet. The eruption is generally completed in twenty-four hours, when the intensity of the symptoms diminish, and the fever ceases, sometimes never to return, unless suppuration takes place, which is not always the case. The patient is considerably relieved, and still inclines to perspiration if an adult. The fifth day, the pimples begin gradually to increase in number, size and redness: the spaces which divided them, become inflamed, tumefied, and occasion a painful sensation, whose violence and duration, is in proportion to the number of pustules, and the lastingness of the symptoms. The sixth day, the pustules widen, the face is tumefied and the eye-lids

are so much swollen, that the patient is deprived of sight for some time, without however, experiencing any ultimate ill effects. The tumefaction of the eye-lids very much resembles that, which is produced by its œdematous infiltration. If there are pustules on the eyes, they frequently occasion violent ophthalmiœ, and those in the mouth and pharinx, produce sometimes a severe angina, and always an abundant salivation, which becomes so thick towards the eleventh day, that it can scarcely be spit up: this is accompanied by hoarseness. If the pustules are numerous, the swelling of the hands soon succeeds that of the face. It has also been remarked, that it is not uncommon to see a second eruption in the interstices of the first.

4th Stage—Suppuration.—It is between the seventh and eighth day, that it may be properly said, the suppuration begins. At that period we discover on the top of each pimple a small vesicle, containing a transparent fluid, with a slight depression in its centre. The eighth day they continue to fill up, and the ninth the pustules have attained their full growth, when they are generally the size of a pea. The tenth day the matter contained in the pustules gradually thickens and is changed into a yellow puss, resembling honey. If the pustules are numerous, and the face much swelled, the fever returns.

Some writers are of opinion, that this secondary fever is occasioned by the formation of the puss, and others that it is produced by its absorption. The pulse in this case is astonishingly quick, but if the pustules are few, the fever is so trifling that it can scarcely be observed. Towards the eleventh day the pustules break, a matter resembling honey is discharged, and they loose their smoothness.

5th Stage—Scabbing.—The swelling of the face gradually diminishes, the pulse becomes soft, the fever lessens and the eye-lids are unglued: the rest of the purulent matter thickens and forms crusts, which scabb off towards the fourteenth or fifteenth day. They are succeeded by thin white shells, whose fall shows superficial pits, which retain for some time a dark red colour.

The different parts of the body covered with pustules, exhibit alternately the same phenomena. The inflammation and suppuration follow the same course as the eruption: that is to say, when the pustules of the face begin to turn yellow and dry up, those of the hands and inferior extremities are

white and in their full growth. When the swelling of the face diminishes, that of the hands and feet is at the highest degree, and the pustules scabb off in the same order.

Such is the course of the distinct Small-pox, free from all complications, it runs successively through its stages, and naturally tends to a happy termination.

The fever which accompanies the Variola, is not always of the same nature; most frequently it is of the inflammatory kind, and varies in severity according to age, sex, climate, season and constitution of the patient. It is the opinion of Stoll, that even when the eruption does not take place, it is not less efficacious, and secures from a new infection, Hœc utut minima persœpe nullisque aut vix ullis pustulis judicata, tamen vendicat a morbo. (1.) Sometimes the fever maintains its inflammatory character throughout the disease, and at others, its nature is changed during the second stage, and it becomes typhoid either by errors committed in the treatment or on account of the atmosphere's being hot and damp. The fever then becomes a dangerous complication which changes the nature of the primary disorder. The Small-pox can also be complicated with a gastric affection, or the measles, the peripneumony, a cerebral congestion, the dysentery or the intermittent fever. When this last complication exists, the intermittent fever sometimes disappears and returns when the Small-pox is at an end.

Of the confluent Small-pox.

We do not perceive in this variety of the disease, that regular succession of symptoms just described, and that natural tendency, to a favourable conclusion: on the contrary, its course is generally so much disordered, that the different stages can scarcely be distinguished.

The violence of the symptoms from the origin, sufficiently foretells the formidable character the disorder will exhibit throughout. The chill is severe and the fever hot; the pulse is either hard and thready, or full and strong, the headach, is intense and the irritation of the stomach so great, that the patient is tormented with nausea and obstinate reaching, frequently accompanied by diarrhœa At times the skin is parched, and there is no apparent perspiration; and at others, although the perspiration is abundant, the skin still

(1.) Aphor, 523.

retains its burning heat. The urine is scarce, very red and sometimes of blood, the eyes are inflamed and cannot endure the light; the pain in the back and lumbar region is violent, the prostration of strength great and the patient inclines to drowsiness, delirium, or is subject to subsultus tendinum and convulsive fits; some even expire before the appearance of the eruption.

The eruption does not take place by degrees, but abruptly, in great abundance, and all over the body at the same time. It shows itself on the second or third day, sometimes on the first, but never later than the third; unless there is a complication of typhous or malignant fever, or acute pains, such as those occasioned by enteritis, pleurisy &c. &c, whose intervention disturbs the natural course of the disease. The eruption, which in the distinct Small-pox, always calms the symptoms, does not moderate them in the confluent: on the contrary, the fever is exasperated and marked by a paroxism every night; it aggravates all the symptoms and produces hœmoptisis, epistaxis, hœmaturia and apoplexy.

The eruption is thicker than in the distinct Small-pox, the pimples are not round, but rather flat and oval. Those on the hands and feet are larger than on the rest of the body, and they appear to diminish in size from the extremities towards the trunk. Sometimes they look so much like the measles, that the diseases might be confounded, if proper attention was not paid to the attending circumstances.

In the progress of the disorder, the pimples rise, approximate more and more, and form red clusters, resembling the erysipelas which cover the whole of the face. The tumefaction becomes general, the face is prodigiously swelled, the throat is tumefied and the patient feels an irritation and constriction which renders deglutition very difficult. These symptoms are occasioned by the pimples which are developped in the mouth and pharinx: the nostrils are sometimes so much swelled by them, that respiration must take place, through the mouth. The irritation or inflammation, appears also to extend to the whole of the intestinal canal.

Towards the seventh day, the period of suppuration, the matter contained in the pustules becomes white, and the whole extent of the skin appears as if covered with a white pellicle; this pellicle grows harder every day, and occasions a great tension which creates much pain, it takes a brownish

tint, but never that yellowish appearance or that consistency which is observable in the distinct Small-pox.

All the symptoms increase during the period of suppuration, and the violence of the fever is in proportion to the number of pustules. The patient is in great agitation, light-headed &c. &c, the soreness of the throat at this period is very distressing. Towards the fifteenth, twentieth or twenty-fifth day, the pellicle scabbs off, and is soon succeeded by thin shells which falling, present deep pits, ulcerations and sometimes unsightly seams; a convincing proof that the disease is not confined to the chorion as in the discrete Small-pox; but extends to the cellular membrane. The pits or scars retain for some time a deep red colour which ultimately wears off, and the skin recovers its natural colour, but not its smoothness.

The salivation and diarrhœa are two important symptoms to be observed, and which frequently accompany the confluent Small-pox; the first in adults and the latter in children. The salivation begins sometimes with the eruption, or a day or two after. The saliva is at first very thin and in great quantities; but thickens by degrees and about the eleventh day becomes so viscous that it occasions great anxiety, thirst, coughing, and frequently threatens the patient with suffocation, it is the more alarming as it soon produces ulcerations on the lips and inside of the mouth. As the salivation diminishes, it is succeeded by the swelling of the feet, hands and face; or by alvine evacuations, copious sweats and discharges of urine.

The diarrhœa is later in making its appearance in children, than the salivation in adults; but when it begins, it lasts as long as the disease: this diarrhœa often proves favourable, from being the means of freeing the primœ viœ from the indigestible matter with which it is frequently surcharged, and which produces an irritation, that becomes an obstacle to the eruption. However, if the diarrhœa grows watery at the scabbing of the pustules, it may sometimes prove fatal. The diarrhœa is less beneficial to adults who generally incline to perspiration.

Nosologists, have admitted several kinds of confluent Small-pox, which are but modifications of that just described. The only one deserving attention, is that in which the pustules are black, as well as the intervals which separate them, and not much elevated; if opened, they discharge a

dark coloured blood and appear gangrenous. This is a complication with the typhous fever. In some, there is hœmaturia, others void blood by the intestines, nose, mouth and even by the eyes; petechiæ are perceived on different parts of the body, particularly the chest, the patient cannot sleep, and is distressed with convulsive reachings, his body exhales a fœtid or cadaverous smell, abundant sweats supervene, the discharge of urine is suppressed and delirium, phrenzy and death, close this scene of anguish.

It is my belief that the typhus or malignant fever, which generally prevails with the Small-pox, and is so often mortal, is nothing but the Variola itself which proves fatal previous to the eruption; and from hence arises the incorrectness of the calculation of those who only arcribe to Small-pox, the deaths which occur after the eruption has taken place.

The Small-pox does not always end by the desiccation of the pustules, in the discrete, it may terminate by resolution on the seventh day, without the supervention of any dangerous consequences; or by a copious epistaxis, and yet secure the patient from a future attack. When the crisis is complete, the distinct Small-pox generally strengthens the constitution: it is also the means of curing obstinate diseases which exist at the time of the attack. I knew a young girl, who had scrofulous tumours on the neck, which had resisted every remedy, she took the Small-pox, it was benign and after this new disorder, the scrofula easily yielded to a mercurial treatment.

The confluent Small-pox, is usually attended with melancholy consequences such as obstinate ophthalmiœ, ulcerations and spots on the cornea, blindness, deafness, chronic inflammation of the internal viscera, slow fevers, paralitic affections, abscesses in the articulations or atrophy of the limbs.

It appears from the result of the inquiries of a great number of physicians into the morbid anatomy of this disease, that they have never found traces of the eruption in the viscera or cavities; I was however present at the opening of a child a few years ago in Paris, who died of the Variola: small pimples were found here and there in the duodenum with a slight depression in their centre. In the jejunum they were more apparent and formed clusters which resembled those of the face; at the end of that intestine and throughout the ileum, the pimples were as numerous as on the surface of the

body, the great curvature of the colon was covered with larger and more elevated ones; and they were so thick in the rectum that they touched each other. I have also seen a pustule whose edge was perfectly black and situated on the muscles of the larinx, which had occasioned death by suffocation, in a case of distinct Small-pox. In children, we sometimes find the bones arroded and fractured, in complications of hœmorrhages and typhus fever, the blood is found in a state of dissolution.

In the first days of the disease, it is very difficult to determine whether it is the Small-pox, as its symptoms resemble those of other cutaneous affections, such as the measles, the scarlatina and the varicella, or inflammatory fevers. If however, a variolous epidemic prevails where the patient resides, he has been exposed to its contagion, has not had the disease or been vaccinated and is in early youth, the diagnosis becomes almost certain.

When the pimples have appeared, the Small pox may yet be mistaken for the measles or a miliary eruption. We must however remember that the measles are generally preceded by a troublesome dry cough, the pimples of a more irregular form than those of the Small-pox; that they are of a bright red and in clusters. As to the miliary eruption, it is still more irregular and much less elevated; but it is impossible for us to observe these differences in our coloured population.

When the characteristic symptoms of the disease are developped, it is scarcely possible to mistake it for any other, even the varicella, to which it then has the most resemblance, and may it not be from a want of discrimination between those two diseases, that persons are said to have been twice affected with the Small-pox, and that even at the present time, the efficacy of vaccination is doubted.

Prognostics.—The Variola is an eminently dangerous disease. In different ages, and in various countries, its ravages have been so great, that it has been considered as a pestilence. No disorder baffles the skill of the Physician, more than this; in the morning all the symptoms prognosticate a happy termination, towards noon or night the scene is sadly reversed, and that without any apparent cause. As all constitutions are not equally liable to the infection; so we find its effects to be different, in different persons. There are occult and unaccountable predispositions which continually

lead us into error: thus, those we would suppose likely to run most risk in an attack of this disease, are affected with a benign Small-pox; while those we think would sustain it best, are disfigured with hideous seams, or carried off by an agonizing death. There are whole families to whom it proves fatal. Women and children are generally observed to support it better than men, from the flexibility of their system. The Small-pox is particularly dangerous to those whose fibres are stiff, and those who are in the habit of anointing their bodies with oils, or rubbing with essences and rosins, as the Indians, Malayans and Africans.

Aged persons, those of inflammatory constitutions, of great nervous irritability, or addicted to wine and debauchery, are in the most eminent danger; while those on the contrary, of sober habits, and who live according to the strict rules of temperance, run little risk. Persons of the most robust health, (quorum sanitas summa, quœ semper Hippocrati lubrica dicitur) are also exposed to great peril. Those who have external emunctories, such as issues, ulcerations, tynia and Gonorrhœa, (1) easily contend with it; but when the solids and fluids are already vitiated, that ulcerations of the lungs, obstructions of the glands, and worms in the intestines exist; the Small-pox assumes a most alarming character. The Variola may also be complicated with dentition, pregnancy, confinement, the first appearance of the catamenia, and induce fatal consequences.

Variolous epidemics generally assume a benign character, when the atmosphere is moderately warm and damp; but if the weather is rainy, hot and oppressive, the disease is usually confluent and dangerous. The Small-pox is also of a bad nature in cold and damp weather, as in Autumn and Winter. In dry weather, whether cold or hot, the Variola is particularly fatal, because it encourages the inflammatory disposition of the disease; and is still more so, when the rheumatism or disentery is prevalent. The Small-pox is mildest in tem-

(1) Circumstances, tending to prove that persons affected with gonorrhœa run also little risk of contracting the yellow fever; have fallen under my immediate observation during the two last epidemics which prevailed in our city. In 1819, a young man, stranger to this climate, who continually visited those affected with the yellow fever, and who had the gonorrhœa, escaped the disorder. This fact I at first attributed to chance; but in 1824, the same supposition appeared to me almost inadmissible, as two persons whom I was attending for Gonorrhœa, had been here but a few months previous to the epidemic, were very intemperate men, and not only resorted continually to places where the fever raged; but actually lived in a house where several were ill, and one died of the yellow fever; without having experienced the slightest indisposition through the season.

perate climates, as Persia, is more severe in Egypt and Greenland; but the Tartars and Kalmucs are the people who suffer most from its ravages. In England it is more fatal than in France; in Russia and some parts of Germany, at least one third of those attacked, are its victims, in Sweden about a tenth; and always more girls than boys.

The distinct Small-pox, is generally less dangerous than the confluent, and when sporadic, less so than when epidemic. To judge whether the Variola is confluent or discrete, it is only necessary to observe the number of pustules on the face: if they are few, we may auger well of the disease: even when numerous on the rest of the body.

Convulsions and epileptic fits in children, are the forerunners of the eruption, and according to some authors, announce a benign Small-pox. In adults and the advanced in age, these symptoms are of bad omen.

Hœmorrhages of the nose are favourable when they occur early in the disease.

When previous to the eruption, the urine is whitish, resembling whey, and the pulse is full and soft, we may hope for a favourable termination.

Boerhaave, Van-Swieten, Sydenham and other great observers, have remarked that the slower the eruption is in coming out, the milder the disorder; unless the delay is occasioned by a want of energy in the vital powers.

When the eruption has taken place regularly, the pimples are few, well formed, with a bright red circle at their base, and become successively white, opague and yellow, the fever abating or ceasing after the eruption, the skin soft, perspiration gentle, respiration and expectoration free, and urine copious and light coloured, no congestion towards the head or obstruction in the abdomen; when the swelling of the face continues until about the eleventh day and there is then a moderate diarrhœa, we have every reason to presage favourably.

On the contrary, the Physician will derive a fatal prognostic from the violence of the fever and other symptoms that precede the eruption, if there is any severe local pain particularly in the chest, resembling that which is felt in pleurisy, which does not abate or disappear, after the eruption has taken place.

We may anticipate a confluent or typhoid Small-pox, if from the beginning, the eyes are inflamed, the pulse quick

and small, the skin dry, hot, and sore to the touch; and there is a visible beating of the carotid and temporal arteries.

If the eruption breaks out suddenly, and is irregular, if there is frequent syncope, violent sweats, flattening of the pustules with a dark circle around them, a constant desire of making water accompanied with colic, livid and black spots, the face not swelled about the period of suppuration, Hœmaturia and other hœmorrhages, a tumefied abdomen painful to the touch, delirium, convulsions, subsultus tendinum, exhausted strength, alteration in the voice, loss of memory, and the frequent twinkling of the eyes, we must expect fatal consequences.

Treatment.

If the Small-pox in its origin, was more fatal than it is at present, it is not that it was of a more malignant nature, or that the disease has degenerated; but because Physicians were ignorant of its proper mode of treatment, to which they have since, directed their particular attention.

The preservative treatment was early resorted to, consisting first in the use of mercury, afterwards innoculation, and lastly vaccination: for there is no disease (except the plague,) against which medicine has so strenuously exerted itself. Boerhaave considered mercury and antimony as specifics against it, Lobb recommended æthiops mineral; Berkley, tar water, Etmuller, and Langius, the tincture of myrrh. Rosen says, that the use of mercury prevents the Small-pox, or lessens its violence; and was in the habit of giving to children that he wished to guard against the contagion, preventive pills, consisting of calomel, camphor and gum guiacum, which he ordered to be taken for three months, at first twice and afterwards three times a week, but all those means have been unavailing.

Vaccination has happily succeeded those ineffectual prescriptions. Before its discovery, innoculation had done much to ameliorate the violence of the Small-pox, but were anxious for something more efficacious, and it was reserved for the immortal Jenner to render to mankind this incalculable service.

It is impossible to lay down any positive rule for the treatment of the Small-pox, as it must vary according to the indications which occur in each of its stages.

2d Stage.—Febrile Action.—As our success very much depends on the means employed in the commencement of this stage, we must be careful not to omit any thing that may be essential; therefore as soon as we perceive the first symptoms of the disease, we must put the patient on a strict regimen, forbidding the use of animal food and wine, prescribe cooling drinks, and for nourishment, baked and boiled fruits.

If the patient is a sucking infant, the nurse must be bled in case of plethora, and be denied animal food, spices &c. and must resort to diluents to medicate her milk, as much as possible.

In all cases, we must prevent the patient from going to bed before the fourth day, as the heat will accelerate the eruption which it is our business to retard as much as possible, and as many are still prejudiced in favour of the heating system, the danger of which was first exposed by Sydenham. When it is necessary for the patient to lay, it must be on a mattress, his covering must be light, his clothes frequently changed, he must occasionally walk about the room, which must be kept cool, and the air often renewed. In Summer, when the heat is oppressive, the room should be every now and then sprinkled with cold water, which in evaporating, absorbs a part of the caloric, and produces an agreeable temperature.

Injections are also usefully employed; they clear the digestive canal, quiet the intestinal irritation, relieve the headach, and lessen the thirst and difficulty of breathing. Their use must be discontinued towards the eruptive stage.

In case of bilious symptoms, in order to free the primæ viæ from indigestible matter, which might by irritation prevent the eruption, (in consequence of the great sympathy existing between the digestive and dermoid systems,) we must prescribe tartar emetic, sweetened with manna, as is highly recommended by Huxham in such cases.

The eruptive fever, may also be complicated with a mucus fever, particularly in children, (to whom the diarrhœa is salutary,) tartar emetic, is also employed in this case, and may be administered every other day with manna; Hoffman used it successfully with children, who were weak, and had a difficulty of breathing. Absorbents and anthelmentics are to be used when the evacuations are green and offensive. When the fever is free from complications, but is very violent, (which is often the case) with a strong and full pulse, it

must be abated by bleeding, and an antiphlogistic diet; a method first employed by Rhazes, and whose utility has been confirmed by Sydenham. Bleeding in particular, is one of the most propitious means of lessening the symptoms and assisting the eruption, when it seems to take place with difficulty; this appears to be solicited by nature itself, as we at times find all the distressing feelings alleviated by an epistaxis.

Warm baths in relaxing the fibres, diminish the spasms, and encourage the eruption, they have often been employed with great success by Physicians. The peasants of Hungary, immerse their children every day when they have the Small-pox, and give them whey to drink. Vapour baths may be used instead of warm water. Emetics are useful not only as sudorifics; but also on account of the property they possess of quieting the irritation of the stomach, which is often shewn by spontaneous reachings and a pain in the epigastric region.

Bleeding is most necessary in plethoric habits, and in those who live highly, when inflammatory diseases prevail and the wind blows cold and dry; it is hurtful, on the contrary, in indigent persons and phlegmatic constitutions, when the weather is cloudy, warm and damp, and malignant diseases prevail; it is also contraindicated when the fever lingers, the pulse is slow, the vital powers reduced, and the extremities cold; in this case it will be proper to administer tonics, as ice-water, wine &c. and blisters must be applied to the legs.

When there is very great oppression, and a tendency towards organic inflammation, we must bleed as much as the indication appears to require; to children, leeches should be applied behind the ears, and these means assisted by cooling drinks, such as chicken broth, barley water with nitre, lemonade, black berry syrup, and other acidulated drinks. If the blood flows with two much impetuosity towards the head, and there is great tention in the Hypochondria, we must bleed in the foot, and make scarifications on the legs to divert the congestion and by attracting a number of pustules to those parts, endeavour to prevent a confluent Small-pox. If there are frequent convulsive fits, the remedies must vary according to the producing cause: sometimes baths, and sometimes antispasmodics are to be used.

Opium, which accelerates the circulation of the blood and

inclines it to the head, is injurious in this stage of the disorder, if the fever is of an inflammatory character; unless there is constant reaching, great diarrhœa and severe pain which imperiously demand its use. Sydenham and Cullen also recommend it in violent convulsions.

3d. Stage—Eruption.—On the approach of the eruption, we must prescribe gentle diaphoretics, such as a weak infusion of elder or linden tree flowers, Avicenna and afterwards Forestus considered a decoction of dried figs, very salutary, as having a tendency to the skin, Fracastorious asscribes the same property to a decoction of lentil. We should also at this time pay particular attention to the eyes which must be frequently washed with a soft sponge, dipped in milk and water, or flax seed tea.

If on the first appearance of the eruption, there is great anxiety, violent headach and subsultus tendinum; these symptoms may be removed by cupping on the shoulders. I have frequently seen this operation immediately followed by the most salutary effects, the result might probably be the same, if the application was made to the legs. The skin being very thick on the hands and feet, the eruption takes place with great difficulty, and the patient feels acute pain in those parts which may be relieved and the eruption facilitated by their immersion in warm flax seed tea, if there is a slight epistaxis, we must assist nature by pricking the nostrils with hogs bristles, and not hesitate to use the lancet during menstruation, if the discharge does not appear sufficiently abundant to produce the desired effect.

Rosen recommends the application of sinapisms to the face even after the pustules have appeared, as a means of preventing the deep pits which are their usual consequence. This would be a similar result to the one reported by Ambrose Parey, of a leprous face covered with pustules, which was perfectly cleansed by applying a blister.

When the eruption takes place easily, there are but few pustules on the face, and no signs of plethora, the disease requires no remedy; but if the eruption is retarded, and it is not in consequence of plethora, we must resort to emetics whose diaphoretic properties may be relied on.

If the fever does not abate or cease after the eruption, and the pulse is still full and hard, bleeding becomes necessary, and blisters and sinapisms must be immediately applied, should the eruption suddenly disappear; but if this is occasioned by

a want of action, tonics such as bark wine &c, must be administered.

It is also during the period which elapses between the eruptive and secondary fever, when it is so important to keep up the eruption, and facilitate suppuration, that narcotics are beneficial, as besides their soothing properties, they have a tendency to the skin. Their use is less urgent in the distinct than in the confluent Small-pox, in this case they often produce wonderful effects, by lessening the sufferings occasioned by an acrimonious matter that fills up the pustules, keeping up the perspiration; and thus preventing the absorption of the pus. Dehaen thought so highly of narcotics, that he was in the habit of giving morning and evening, begining at the third day of the disease, from one ounce to an ounce and a half of a syrup composed of the white poppy.

Both Cullen and Sydenham approve of this method, provided it does not occasion constipation, and gave opium daily, as long as the patient had a motion every other day. Storck administered to those of his patients who were weak, a tonic mixture with laudanum, but this manner of giving opium, I do not consider so advantageous. Tissot on the contrary, was very cautious in the administration of narcoties, and never allowed them, but when the eruption was extremely painful, particularly in children, to stop excessive diarrhœa, and lessen the violence of the colic often induced by a long use of cooling drinks. In the administration of narcotics, we must pay due attention to the degree of excitement which may indirectly be produced by the opium, and to its tendency towards checking the diarrhœa which is so often salutary to children during the period of suppuration.

4th Stage—Suppuration.—If the secondary fever displays itself with two much violence, the lancet may yet be used without any fear of interrupting the suppuration. Cullen has seen bleeding in such cases, produce instantaneous and happy effects, although there had been but a small quantity of blood taken. He recommends it during this stage whenever the pulse is quick and full, and orders it to be repeated if the fever does not abate. It is thus that when in large abscesses there is plethora and excess of heat, the suppuration is promoted by bleeding; it succeeds still better when the constitution of the patient and that of the atmosphere are essentially inflammatory. Should there be a complication of Angina, pleurisy, peripneumony, hœmoptisis or dysentary,

the treatment suitable to local inflammations is to be employed. Prima ratio, says Stoll, habenda est inflammationis.

During the secondary fever it is essential to keep up the salivation to which adults particularly incline. It begins when the eruption is completed, or a short time after, and is very viscous until the eleventh day. It may early be assisted by appropriate gargles, as the decoction of mustard seed, or the oximel, when it is dilatory or suppressed, without being succeeded by the swelling of the face and hands; a circumstance which is generally attended by fatal consequences. Opium is extremely useful in this case, experience having proved that it very much excites, and often has recalled the salivation.

When this discharge is checked and gargles have been unavailing, when thick phlegm obstructs the chest and stomach, that deglutition is almost impossible; we may venture an emetic, but with great caution as the consequences may be dangerous. In this case, I would recommend as a means of preventing suffocation, that the patient should receive into his mouth through a tube, the steam of a decoction of mallows, myrrh, honey and vinegar, I have found the greatest success from this application.

When the salivation disappears, the swelling of the face subsides, and the strength is exhausted; Hoffman recommends the æthiops mineral: might it not also be excited by the use of mercury, or by its combination with opium and bark.

The diarrhœa must not be checked, unless it prostrates the strength, the pustules are depressed, and their intervals of a livid colour; when mild as tringents, and narcotics must be administered.

It frequently happens, during the secondary fever, that a repercussion of the variolous matter takes place on some of the organs, and occasions death, in cases of Small-pox of the most benign character. This superabundance of humours, may be dispersed by diuretics, antiseptics and acidulated diluents; mineral acids have been particularly recommended; but I think cathartics will better, and more speedily procure the desired effect. Mead and Huxham, highly extol their virtue in such cases, without giving a preference to any particular kind; but as mercury, (the German remedium pancreston,) has been so highly recommended as a corrector of the Small-pox, by eminent Physicians, and even

considered a specific by some; I do not hesitate to prescribe it combined with jalap, although I have not ascertained by the test of experience, whether it has more intrinsic virtue than other cathartics.

In France, they are indebted for this purging system in the secondary fever, to the school of Montpellier, which took the idea from the Arabians, to whose practice its pupils adhered for a long time. When the pustules flatten, are surrounded by a purple circle, and the swelling of the face disappears, they recommend to purge briskly, disapprove of the use of tonics and blisters, but expect wonders from cathartics

In the coma somnolentum, which supervenes during the secondary fever, the application of blisters to the back of the neck has been tried, but if any good effects have ever resulted from their use, it may be attributed to their evacuating properties, for in this soporous affection, an increase of irritability and inflammation, must be hurtful, besides their injurious tendency to constipate and diminish the secretion of urine.

When there is a congestion towards the chest, the best means to be resorted to, are large blisters applied to the seat of oppression or to the legs, a free use of barley water sweetened with honey, and a few doses of kermes mineral. Baglivi mentions the case of a child labouring under very great dyspnœa, in consequence of the repercussion of the variolous eruption, from whom he drew about two pounds of blood by cupping all over the body; he afterwards had the patient wrapped up in warm cloths, and the next day, anointed all over with a mixture of sweet oil and spirit of ammoniac, which recalled the eruption in great abundance, relieved the oppression, and the child recovered. The same author asserts having thus successfully treated the repercussion of other eruptions which occurred during malignant fevers.

Should a difficulty of making water supervene, Sydenham and others, recommend that the patient should walk about the room: I cannot imagine what benefit is to be derived from this practice, and I even think it may be attended with dangerous consequences. Relief however must be procured, for the affection of the head soon succeeds a suppression of urine. If the urine is thick, but without burning, a strong decoction of the triticum repens, (1) the dandelion with the salt of amber, and glauber salts, which is at once

(1) Dog's grass.

laxative and diuretic, can be administered, and the muriatic acid, if the fever is violent.

If the emission of urine is attended with much pain, the patient must take chicken broth, mild narcotics, and injections of flax-seed tea and sweet oil, and if the irritation does not subside we must bleed repeatedly.

Of all the complications of this dreadful malady, none are more alarming than hœmaturia, bloody stools and hœmoptisia; which must be attacked by bleeding, until the pulse is reduced, and the suffering abated: blood letting in this case, produces a salutary revulsion from the seat of hœmorrhage; but if to these symptoms, are added a weak pulse, cold extremities and fainting fits, death is almost certain. The most powerful remedies now to be used, are alum, sulphuric acid and bark.

Should the suppuration take place regularly, and the pustules become white, I would strongly recommend their being opened all over the body, and particularly on the hands and feet, where the skin is so thick, with a sharp instrument, to give egress to the matter, which frequently occasions distressing consequences; the surface must afterwards be washed with warm water and a soft sponge, this to be repeated twice a day, and the clothes frequently changed. Another advantage to be derived from this method, is that pustules thus opened, seldom leave any pits.

5th Stage—Desiccation.—During the desiccation of the pustules, particularly if a heating treatment has been employed, it frequently happens that a fatal diarrhœa ensues; the drink in this case must be milk and water with an occasional use of narcotics; blisters can also be applied, but their effects are more tardy. We must not confound this diarrhœa with the salutary one to which children are subject, and which may easily be recognised, by its being unattended with griping, its not weakening the patient, and not interfering with the salivation.

When the secondary fever is over, the pustules are dry and the patient not too weak; the warm bath or ablutions of warm water are frequently to be used, the clothes changed at least twice a day; and cooling cathartics given every now and then. Should there still be slight febrile symptoms, bark, Mynsicht's Elixir of Vitriol, or other tonics are necessary, after which the patient must use gentle exercise in the open air.

ART. II.

A case of abscess of the Antrum Maxillare, attended with extensive caries of bone, by J. De La Motta, *M. D.*

TO THE EDITORS OF THE CAROLINA JOURNAL.

Gentlemen.—Permit me to renew the declaration, that the science of Medicine and Surgery, cannot be better promoted, than by a register of cases, interesting in their origin, progress and termination. The interchange of medical learning, communicable through the medium of a public Journal, must be appreciated by every individual who values the profession, or aspires to advance the cause of humanity. At the present time, improvements in the healing art, are as regular and progressive as the evolutions of the planetary system, and the labours in the *one*, are no less objects of regard, than the magnitude and sublimity of the *other*. However small the modicum in the dissemination of facts, yet, when multiplied, their aggregation may amount to something beyond ordinary consideration; and he who brings his offering to the shrine of Medical science, alike the dispensations of the poor man, should be kindly received and considered as acceptable, as the more bountiful gifts of the rich in medical lore. With these impressions, I offer to your consideration the following case, briefly drawn up, and intended, should any anomalous points therein contained be deemed worthy publicity, you will give them a place in your Journal.

Diseases of the Antrum Maxillare, have ever been considered as tedious in treatment and procrastinating in cure.—Tumors arising either within this cavity, or adjacent thereto, may be timely removed, with a loss of bony substance, and operations have been performed when fungous excressences of considerable size, have been extirpated. Yet, when this part is subjected to abscess, notwithstanding an early and convenient opening be made for the exit of purulent matter, and such cases submitted to the best surgical talents; the disease yields to no remedial means, but proves a source of considerable annoyance to the unfortunate sufferer.

The subject to which I shall particularly refer, is a female of about 12 years of age, who complained in the incipient stage, of a small projection or tumor within the mouth, situated over the palatine bones: on inspection, it was found soft and containing pus; an opening was made which discharged freely. Some detergent application was recommended, and the patient left to the management of the attendants, with the usual directions, in relation to attention to the state of the system, &c.

About ten days after, I was called to see the patient, who presented to the first glance on the countenance, considerable tumefaction about the left side of the face, extending around the orbit of the eye, and so including the lids, as to occasion their closure. The presence of some stupor, and vertiginous affection of the head, which, either from determination of blood to that part, or increased inflammatory action, influenced me to the resort of depleting and antiphlogistic means. The inflammation unyielding to the discussing treatment, and finding the part below the inner canthus somewhat projecting with evident fluctuation, I ordered a soft bread and milk poultice. After the lapse of a few hours, an opening was made which gave vent to about one ounce of matter. From this time, a discharge was gradually produced, and on inspecting the mouth, I perceived the incision made at its roof, was a channel for offensive pus, although the inflammatory action had abated in some degree, yet there was a pointing and evident appearance of accumulation about the external angle of the eye, and extending immediately over the *os malæ*. My patient now laboured under much febrile excitement, accompanied with a profuse and fœtid discharge. From the last external opening, I perceived an exfoliation about to take place, and on enlarging the orifice, which became necessary, the whole of the os malæ protruded and was thrown off, with the entire portion that assists in forming the base of the orbit of the eye. Pieces of bone, were thrown out daily from the orifice near the inner canthus, as also from the nostril of the same side, which when collected together, filled the palm of the hand. I was convinced, the disease extended to the partition of the antrum above the alveolar processes of the superior maxillary bone of that side, and my conjectures were confirmed, by removing two of the molar teeth, which formed an exit for other portions. The ravages of the disease, was not yet limited, with the flow of sanious

matter: from the roof of the mouth, all the bone forming the left palatine plates, exfoliated and were removed. The tumefaction subsiding, a constant icorous discharge issued from the orifices, and also from the nose for eight months. A probe introduced through the orifice, made at the external angle of the orbit, could be passed into the mouth, and readily through the opening, made by the removal of the teeth. A seton was inserted following the tract above described; and although this plan of treatment has been reprobated, and its utility impeached, still in this instance it evidently aided in the speedy removal of the caries portions of bone, after it was withdrawn, the discharge continued, attenuated, a strong injection of sulphate of zinc was used, which, being steadily pursued produced a healthy change. The external and internal orifices soon closed, and with the exception of a very inconsiderable discharge from the nostril of the affected side, the patient is well, having a depression about the lower lid, which separates that from the upper, much more considerable than is observed on the opposite side.

This case has been drawn out with the intention of relating the complete removal of the *os malæ*, and its separation at its juncture with other bones at the transverse and zygomatic sutures. The plan of treatment conveys no novelty, but rather strengthens the practice adopted, and recommended by some of our best Surgeons, in similar cases.

Respectfully your obedient servant,

J. De La Motta.

ART. III.

Case of Peritoneal Inflammation, after confinement terminating in suppuration, by M. C. Mc Lorinan, *M. D.*

Mrs. A. F. was delivered of her fourth child 29th of Dec. 1824. Her labour was easy, and on the eighth day, she arose and sat up for some hours, when feeling fatigued she went to bed; early the next morning, she experienced a severe chill, which continued for several hours without any reaction. About 10 o'clock, a slight reaction was observed,

at this time she was delirious, her pulse contracted, fluttering and quick, and she was thought by the attendants in articulo, mortis, medical aid could not be obtained, in consequence of which a neighbor came, and took a small quantity of blood from her arm. On the next day, viz. the 10th day, about eight ounces of blood were again taken. This gave her much relief, she became sensible, and requested to be bled more freely, which however was not complied with. She was given ten grains of calomel three times successively, without producing any evacuation, she was next given three wine glass fulls of castor oil at intervals, without producing any effect. Her sister in law, a very intelligent midwife, thought that cloths moistened with a solution of glauber-salts, might have some effect in relieving the soreness of the abdomen, and also assist in producing an evacuation, accordingly it was applied and in fifteen minutes a copious evacuation was obtained, which greatly relieved the tension and pain in the abdomen. Small blisters were afterwards applied over different parts of the abdomen, and bark given to break the fever. This treatment was pursued until the 19th of January, (which was thirteen days from her attack,) when I first saw her.

She then complained of a heaviness in the abdomen, which had troubled her during her sickness, and of costiveness, which had continued, (except when relieved by medicine,) from her first attack. Her fever was always present which increased during the night, accompanied with delirium, I ordered her purgative medicines, and light nourishing diet, and the bark was withdrawn, because it was considered injurious. Her abdomen became always tumid, whenever a free evacuation was not obtained, and the bowels were so torpid, as to require very active cathartics. Her diet continued to be very light; for the least quantity of wine or bark, invariably aggravated the fever, the tenseness and pain of the abdomen still continued, and she has, (some days after seeing her,) complained of a hardness, exactly around the umbilicus. To this part a blister was applied, and in two days after, she consented that I should examine it. On doing so I discovered an evident tumour, pointing outwards through the umbilicus, and could distinctly feel a fluctuation of matter. I made a puncture in consequence, through the umbilicus, when the matter spouted out against the wall which was two yards off. Upwards of two

quarts and a pint of matter came away, of thin yellow and white flakey appearance. This discharge continued for ten days, when it changed to a sanious whey like consistence. Hectic supervened with copious cold clammy sweats and distressing cough, and great emaciation. She was now given bark, cooling regimen, and nourishing diet, she continued slowly to recover for two months and a half, when the parts cicatrised and all the dangerous and distressing Symptoms disappeared. In this case, had she been freely bled in the first instance, and copious evacuations excited, these distressing symptoms would not, I am persuaded, have supervened. *

* We quote the following passage from "Dr. Armstrong's work, on Puerperal fever, of the termination of one case which he had in a similar manner with the above" When from a cautious survey of all the symptoms, there are grounds to believe that the stage of excitement is past or upon the point of declination, every thought of general venesection ought to be abandoned and if any measures can then save the life of the patient, which is indeed most doubtful, laxatives and opiates are by far the most likely, together with light nutritious food, exhibited in small quantities at once. But it must be always recollected whenever a highly inflammatory disease has unimpededly run its course, that the vital organs are generally somewhere wrecked towards its conclusion; so that if it were possible, at that advanced period, to abstract whatever remains of fever may be present, the patient would most frequently die, from the organic mischief previously induced. *Yet now and then a remarkable recovery, does take place from the last stage of the puerperal fever, even when no proper measures had been used in the first. An instance of this kind once fell under my observation, in which an opening took place spontaneously at the navel, after the patient had struggled several days with extreme irritation and exhaustion, and the turbid serum and coagulable flakes effused into the abdomen from inflammation, were evacuated at this opening which finally closed, and the long continued hectic ceasing, the patient got quite well at last —Editors.*

ART. IV.

Letters addressed to the Agricultural Society of South Carolina, on the means of improving the health, of the Lower Country, by JOSEPH JOHNSON, *M. D.*

Gentlemen—It would be presumption in me to offer any thing to your Society on Agricultural subjects: but as we are all interested in the health and prosperity of the low country, and the members of your Society more deeply than

others, I submit to you the result of my reflections on this, the chief object of my attention.

That this part of the State is more sickly now than formerly, I believe you will all agree; that it may become worse, is ascertained; and on the consequences of this progressive deterioration, we must all look with anxiety and apprehension.

As far as my observation goes, this increase of sickness commenced with the abandonment of the Inland Rice fields, and has advanced in proportion to the number abandoned, and the quantity of high land cleared. By the former an immense increase was occasioned in the quantity of miasmata; by the latter, the most efficient means of purifying the Atmosphere were removed. I confidently hope that the evil may be arrested in its progress, and in a great measure removed by means, within the reach and control of all.

That other countries have been ruined by the gradual deterioration of climate, can be proved by history; and the situation of Italy in particular, may be known from the publications of Sismondi, Chateauvieux and others.—Even where rice is cultivated on the Banks of the Arno and the Po, although sickly, the prevalence of sickness is nothing compared with that in the neglected Sea Coast, and even the Champagna di Roma, which was once the garden of Italy. We also know that where countries had been notoriously sickly, they have been rescued from that deplorable situation by proper draining and cultivation. Particular instances of this kind in our own State, must be familiar to you all, and the reverse from neglect or imprudence, is unhappily too true. Many healthy situations have been ruined by inconsiderate clearings—by Mill ponds and Reserves, and again have been restored to health by removing the sources of sickness.

Private interest and individual enterprise alone may effect the improvements contemplated. Where several are interested they must associate, and where all will not do so, legislative aid must be obtained. A planter may turn his attention to his own abandoned rice field, or be annoyed by those of other people. He knows that the soil is of the first quality of blue clay, superior to a great proportion of tide land. He knows that excellent crops have been made from it in favorable seasons. He reads of the system of draining and irrigation practised in China and other parts of Asia. He learns that a very cheap and simple machine may be used to flow

his fields when too dry, and to relieve him when there is an excess of water. He purchases his neighbours property for a trifle and removes the nuisance.* He makes certain and abundant crops, and his success in a few years induces others to follow his example, and the dry culture of such fields becomes general. Give me leave to offer the suggestion of a friend, a man of the first respectability—that flax would probably succeed as well in such grounds as in the low country of Holland. If not exceeding my province I would more particularly recommend that they be allotted to all the purposes of grazing and soiling. By this plan, all occasion for the unwholesome reserves would be obviated and the place for the reserve become the richest part of the field.—The cultivation of Sugar Cane as food for cattle of all kinds both in summer and winter, may be well worth your consideration. It would be a most luxuriant crop in such lands, and the juice when fermented and distilled is said to be more profitable in Georgia than the cultivation of Sea Island Cotton. A few enterprising men may soon improve a neighborhood and enable their families to reside so near their own planting interests, as to superintend and inspect them daily.

If from your own experience, you are satisfied of the great advantages resulting from your residence on your plantations throughout the winter, what must be the additional advantages of such superintendence in the Summer and Autumn—the most interesting and important part of the whole year.

That it is more advantageous to manure and improve an old field than to clear a new one, is insisted on by the most experienced farmers, even in countries where wood is much more valuable than with us and the cost of manure much greater. Independent of the facility with which an immense mass of manure may be collected by alternate strata of marsh grass, stable manure, fennel and other weeds, turf and marsh mud, &c.—the first cost of the land is the most conclusive consideration, for without such collection the planter will require at least twice the quantity of land for a change of fields. By rendering an old field productive, you not only recover so much land actually lost, but save the necessity of holding a greater quantity of land than is required for cultivation and preserve the trees for the advantage of health.

* The deserted Rice fields are the Pontine Marshes of South-Carolina.

Is it not better to manure a field until it yields 30 or 40 bushels or more of corn, to the acre, than to clear a new one, which will not yield more than 15 or 20? Will not the same labour, time and expense effect the former as the latter, except where the wood be readily sent to market? Would not the effectual draining of a great portion of the inland swamps and rice fields, enable them to afford the most abundant crops of corn, hay, &c.? Would not some such system of culture, greatly improve the prospect of health in this part of the State.?

To give some idea of the simplicity and effect of a machine for draining fields incommoded by back water, or from any other cause too wet, I send a rough model of one that may be made by any carpenter, from materials always at hand, which will enable each man employed on it to raise about 75 gallons of water per minute *

Besides the draining of such cleared swamps, there are bays and ponds in the neighborhood of every plantation, the draining of which would greatly promote the health of the vicinity. Another fruitful source of disease is the neglected stagnant water in the ditches and canals of the rice fields, after the water has been let off preparatory to harvest. You refresh the water in your fields as often as bubbles and scum, which denote fermentation, are observed to collect; but neglect that in the ditches altogether as soon as the rice is ripe. From the continued warmth of the weather for the space of two months after this period, it is obvious that a vast quantity of stagnant water must be in these ditches, and a proportionate quantity of noxious exhalation be the consequence. The exhalations resulting from rice culture are trifling compared with those from neglect and oversight in leaving stagnant water where there need not be any. The spirited and commendable experiment made by our neighbours of Savannah, has not succeeded quite as well as they merited. With deference I think this is owing to two circumstances; all the neighbouring rice fields are not subjected to dry culture, and tney which are so subjected are not perfectly drained. The water stagnating in the drains from May to November, I believe to be the cause of sickness in the vicinity. If they will not construct machinery for throwing off this water, they should at least make it ebb and flow in the ditches with every tide.

* This may be seen at Chisholm and Taylor's counting house.

Give me leave to offer an opinion as to the precautions that may be useful if not necessary to a family about to spend the summer in the country. A residence in villages is not advisable—the distance from your plantation is generally so great as to render your superintendence difficult if not inefficient, and your health is endangered by every change of weather that may overtake you on the way, or that may detain you at the plantation. The dissipation and rivalry that will always arise in such settlements, very soon render them unsuited to health and economy. A suitable place may generally be found within a mile or two of your planting interest, where you may inspect every thing, and obtain your supplies without difficulty or delay. If two or three families would unite in such a plan, it would of course be more agreeable.

In making the choice, a pine ridge free from moss, having a moderate slope, should be preferred; but no such place should be finally adopted until it is ascertained to afford good wholesome clear water. The associates should agree, in writing, not to make a clearing or even cut fire wood within a given distance of the settlement; to provide for making a large fire morning and evening in some central situation for the purpose of rarifying the air, expelling the dampness and consuming the surrounding atmosphere; likewise to keep a certain space around each house clear of grass, weeds and brush, all of which retain much moisture. The chilly, damp night air, the heavy chilling dews in the morning, and the extreme heat of the sun, should be carefully avoided. All such extremes have a great tendency to excite this disease of summer and autumn, especially where the extremities of the body are chilled by being wet with dew, and the sun beaming with intense heat on the head. In such cases a warm bath would have the best effect in equalizing the circulation and heat of the body. No one should ever lie down or sit in wet clothes.

In other countries similarly situated, great attention is paid to diet, and I have no doubt of its advantages. All excess in eating and drinking is forbidden—the food should be abundant, nourishing and simple; the only restrictions generally observed are as to eggs, butter and milk as food.

If any preventive medicine is necessary, it certainly should not be of a debilitating nature; the mild tonics, such as bitters and bark, would be useful, and by many are deemed

necessary. To obviate as far as possible the consequences of occasional exposure to rain, wet feet, and other contingencies of this nature, the best precaution is the daily use of the cold bath on an empty stomach at any time of the day, but particularly in the morning. The most convenient way of applying it probably is, the effusion of a pitcher of cold water over the neck and shoulders.

I forbear to urge the advantages to be derived from a residence near your plantations throughout the year. Economy and superior skill and care will probably enable the planter to make a profit of 8 or 10 per cent, on his capital, whereas 4 is now the utmost that is generally realized. Hoping that these suggestions may be corrected and improved by your practical knowledge and experience,

I am, with much respect,
Your obedient humble servant,
JOSEPH JOHNSON.

To the Agricultural Society of South Carolina.

Gentlemen—The opinions expressed in my communication about a year ago, having been illustrated and confirmed by publications which have since appeared, particularly by the address of Dr. Scriven, to the Corporation of Savannah, and by the article in the Quarterly Review, on Malaria; I again address you on the improvement of the Health of the neighbouring Country.

It may be recollected, that I considered the neglected Inland Rice fields, as the Pontine marshes of this State, and urged that they should be drained and cultivated as meadows, for all the purposes of Grazing and Soiling. I likewise recommended as strongly, that Planters should secure for themselves some Summer retreat, as near as possible to their own Plantations, and give some rules for making such selections and for preserving health during a residence there in the sickly season of the year Some inquiry having been made as to other particulars, I will endeavour to detail as many as may be deemed useful, and show the necessity for early and diligent attention to the subject, from all who own property in the low Country.

In reclaiming the old Rice fields I believe that little more is necessary, than to repair the outer Banks, with large

Trunks sufficiently low, to secure the prompt and complete discharge of water, that may flow into them from the different leads. I believe that the old ditches in their present situation, though not sufficient for Rice culture, would require little or no work, to render them sufficient for meadows. A good spring ditch to intercept the water that would otherwise run into the field and discharge it beyond the Bank, may be found useful. But in such details, your greater experience will be the best guide. By cultivating these very fields, our Predecessors were able to live on their Plantations, throughout the year, raise large families and accumulate fortunes, without the advantages of machinery, and while the price of Rice was only half of what it now affords. Now that their cultivation is discontinued, they are in a much worse situation, than when in the state of nature, the white Population has mostly left the Country, and the owner can no longer visit and superintend his planting Interest, except at the risk of his life. This danger is growing progressively greater, and its consequences more alarming.

As to the choice of a residence, I think it should be either close to where the salt water ebbs and flows, or in some dry situation in the Pine land, as described in my last. In the former case, there must be no Rice field, pond or other low ground in the vicinity, or these must be so drained that no water can remain stagnant in them, not even in the ditches. In both cases the under brush weeds, and grass around must likewise be carefully kept down, for so great is the quantity of moisture or dampness, retained by them, so rapid is their growth and the decay of their foliage on and near the ground, that different places have proved more or less healthy, in different years, in proportion to the attention bestowed on this object.

In my last, I gave an opinion that a healthy situation might generally be found within a mile or two of every man's planting interest. I still think this practicable by opening the natural drains to the neighbouring Bays and other low grounds, or so ditching them, that the water may readily run off. The trees must not be cut down in or near them, but the brush cleared as much as possible.

For the preservation of health, uniformity of residence in one place is highly important; occasional visits to town and vice versa will endanger health, while a residence in either place might secure it. So also in occasionally spend-

ing a night on the plantation or other neighbouring places, instead of sleeping uniformly in the summer residence.*

While I remind you of the very numerous and respectable families that resided in every part of this low country throughout the year, before the Revolution; let me likewise draw your attention to the remaining evidences of the attention paid by these residents, to the draining of the country. You cannot fail to recollect with admiration the very extensive deep ditches still to be seen in all the places then inhabited, and which the neglect for more than half a century, has not been able to deface. You cannot fail to observe the co-incidence of increasing sickness and desertion, in proportion to the neglect of these drains. The old Inhabitants tell us, how very abundant stock of every kind was previous to the Revolution, and at how low a rate it was then sold. It is not to be wondered at, we are surrounded by one of the finest growing countries in the world, and are yet dependant on the neighbouring States for our supplies.

Excuse the anxiety expressed on this subject, the very existence of Charleston depends on the prosperity of the low country, and their interests, have always been proportionate and reciprocal.

I remain Gentlemen,
Your obedient humble servant,
JOSEPH JOHNSON.

CHARLESTON, Feb. 14, 1825.

* By the employment of a private Tutor, your children may be educated with economy and effect, while you retain the immediate care of their health and religious and moral principles.

ART. V.

Case of the derangement of the Spleen and Liver, terminating fatally in vomiting of blood, with Remarks, by THOMAS Y. SIMONS, *M. D.*

There are no organs of the animal economy more frequently deranged in this country than the Spleen and Liver and the diseases resulting therefrom extend perhaps to as great a degree in the Southern section of the United States.

as in any portion of the earth. It is important then that the pathology of these viscera should be carefully observed, and every contribution given illustrative of their diseased structure. With this view I have thought the following case would not be uninteresting accompanied with some remarks.

Mr. —— ———, Until the age of 22 had lived in the city, was of robust habit, and had never had a fit of sickness of any importance. Having obtained a planting interest he retired into the country, where he lived all the year, and contracted the intermittent fever, which was relieved in winter, but in summer when again exposed to the exciting cause it was reproduced. It was thus with him for many years, alternately, in the winter relieved and in the summer attacked, a circumstance common to many planters living in the country, throughout the year, and he at length became so familiar to these attacks as to regard them (as a matter of course,) requiring no particular remedies except when very violent, and frequently he would participate in the pleasures of the chase, while labouring under the attack — This course of things had continued for many years, until he was attacked with vomiting of blood, which threatened his life and which it was difficult to arrest. As soon however as he was relieved by the active depleting remedies necessary on such occasions, his appetite became so voracious as not to be controlled and this was always the case on his recovery after every attack, and it was impossible to get him to submit in any degree to diet and regimen; although apparently in the enjoyment of good health, the chylopoetic viscera never performed faithfully their office, in consequence of which he was obliged to take cathartic medicines frequently, to relieve him of oppression and assist the operations of nature. This had continued for many years, nearly every year of which he was attacked with fever and threatened with vomiting of blood. There was in this case always the following indications of disease. His countenance was always pale and sallow, his abdomen enlarged and sensibly so in the region of the spleen, his bowels were never regular, but always either constipated or relaxed, and although as before mentioned his appetite was great, the Chylopoetic viscera never performed their duty and he was always puffed and heavy after meals. His pulse was always full, slow and intermittent, and this he attributed to an anomalous

constitution rather than to a positive deranged state of some viscus. It is remarkable that this gentleman under such circumstances possessed an amiable temper and his company was much sought after and much estimated. Such is a brief history of this case before I attended Mr. ———. Upon being called to him in consequence of the death of his former Physician; I told him as he had previously been told the true cause of his disease; that the spleen was enlarged and the whole intestinal circulation was directed to that viscus, and that it was indispensibly necessary to produce an equilibrium of action in the circulating system. To effect this he was advised to undergo a full alterative treatment, and retire early from the country and travel. He consented, but on getting great relief, he became impatient of the necessary restrictions and resumed his former avocations. Indeed he was so absorbed in his planting interests that nothing could abstract him from it.

Exposing himself thus to the exciting cause the disease again appeared in the summer of 1823. He was extremely sallow with clammy moisture in his skin, which was hot, his tongue furred, and considerable nausea, and irritability of stomach; his pulse was full, strong and intermittent, and there was considerable cerebral excitement; I bled him very freely, until the pulse softened and assumed a more regular action, he was then given calomel and rhubarb, and afterwards snake-root and salts, when he passed immense quantities of dark grumous putrid blood resembling very much the black vomit, but differed in giving a purplish hue to white paper dipped in it, with this there was not the slightest portion of bile intermixed. When this blood had passed I could feel a sensible diminution in the region of the spleen. He was subjected to an alterative course, and a large blister applied to the left Hypochondriac and epigistric regions, he gradually recovered, but never to as great a degree as in his former attacks; he went about however and indulged his appetite. This continued until October, when he complained to me of feeling heavy, and having spit up some blood, I advised him instantaneously to be bled, he declined however until the evening, as he had some business to transact, in pursuing his business he unfortunately took some salts in soda water. He felt so unwell he returned home, the medicine commenced to operate, when he passed up and down an immense quantity of blood. I was immediately sent for,

on arriving I found him speechless and completely exhausted, the vessels collapsed and a cold clammy perspiration all over the surface. I endeavoured to bring on a reaction, and then by bleeding to abstract the circulation from its fatal direction, a slight reaction took place, but on opening a vein a few drops of blood only escaped, and a collapse immediately succeeded. He was again seized with vomiting, and the blood spouted out of his mouth, in a gush to the amount of a half gallon, every means was used to check this determination, but with no effect, and he died the next morning, having vomited and passed by stool several gallons of blood.

Post Mortem, examination. On opening the abdomen the whole of the intestines and mesentery were pale and colourless, but no deviation from a natural state. The spleen was very much enlarged, extending as low as the left Iliac region, and occupying almost the whole of the left cavity of the abdomen, it was flaccid in consequence of the great quantity of blood which had come from it. The splenic arteries and veins were much enlarged, as well as those of the stomach, and particularly the vasa brevia.

The liver was almost completely covered by the omentum and intestines protruded to the right cavity by the enlarged spleen; it was contracted not larger than a good sized kidney, and its Acini were much obliterated. The kidneys were rather larger than common. There were no other parts materially changed.

In this case, the whole of the intestinal circulation had been directed to the spleen, and the portal circulation thus diminished, and consequently a deficiency of biliary secretion, to carry on digestion faithfully. Hence the constant irregularity in the action of the alimentary canal, and the alternate laxity and constipation. Cases of direction of the intestinal circulation to the spleen is well known to be the consequence of the frequent recurrence of Intermittent fever, as a similar direction to an enlarged and diseased liver is the consequence of frequent recurrence of Bilious remittent fever, and it is important in chronic affections of this kind to ascertain whether the patient has been affected previously with intermittent or remittent fever, as in the one the increased circulating action will be to the spleen in the other, to the liver.

In this country, intersected with immense bodies of swamp lands, and reserves of water kept back for the culture of

rice, all who are exposed to the miasma, arising from these sources, are victims of remittent and intermittent fevers, and their sequelae diseased liver and spleen. Few persons who constantly live, in such an atmosphere have a sound liver and spleen, and it is much to be regretted that the great proportion of the lower part of our state is thus situated. It is somewhat singular that this state of things is confined to the white population. While the white man is seen shivering with ague, his countenance cadaverous, and his temper splenetic.—The black, is fat plump and glossy, in the full enjoyment of health, and vigor.

The great desideratum is not the cure, (because this is impossible as long as the patients are again exposed to the exciting cause, and this must be the case unless in the summer, there be a total abandonment of the lower country,) but the preventive, and it would be a signal act of patriotism (and certainly deserving of the most profound attention,) to point out a practical means by which portions of our lower country, contiguous to our planting interests, might be made exempt of that deleterious poison, which is so generally diffused. I must apologize for this digression and beg leave to offer a few remarks, regarding the treatment of Chronic affections of the Spleen and Liver.

Our first step must be to remove our patients to a purer atmosphere, and subject them to a complete alterative treatment. Their diet should be extremely light, and whatever they take should be in small quantities, that there might be as little stimulus, and excitement of the chylopoetic viscera, as possible, for in these affections it must be kept in mind, their is an undue balance in the intestinal circulation, and any great quantity of food, thrown into the stomach in this state of things, would prove hurtful, by requiring a greater action of the digestive functions than they are capable of performing. I am thus particular on this point, and beg leave to impress strongly the absolute necessity of attending strictly to diet in these cases, because the greater number of failures of cure, arise from this neglect. It must be within the experience of most practitioners, of patients complaining of indigestion and deranged liver, and yet indulging in rich luxuriant food, and stimulating wines, thus pursuing the best possible method of perpetuating and increasing their disease.

In place of Calomel, and the blue pill, which are such popular remedies, (and in very many cases justly so,) I would

prefer a combination of tartar, aloes and rhubarb, in sufficient quantity, to obtain several passages every day; in those with torpor of the liver, large doses will be required, and these must be continued until the blue plough-mud like evacuations become yellow, evincing the presence of bile. I had a case of a gentleman who had suffered from a torpor of the liver, connected with symptomatic fever, and great torpor of the alimentary canal; large divided doses of the above combination were given him, so as to excite nausea, and sometimes vomiting, with five or six evacuations for three weeks, when they became yellow, evincing the action of the Secretory vessels of the liver, after which the doses became lessened until their was sufficient natural tone in the liver and intestines to perform their offices unassisted.

As regards local action, the tartar emetic ointment as has been recommended by some British writers, and particularly the celebrated Jenner, in a variety of affections, is in my opinion preferable to blisters. It should be rubbed all over the region, of the spleen, liver and stomach, until thick crops of small pustules come out

All Tinctures should be avoided, and infusions of bitter substances, substituted, and the patient as far as possible, should take gentle and regular exercise.

These are my ideas of the treatment of this disease, and it would afford me much pleasure to receive the opinions of those of more enlarged experience and observation.

ART. VI.

An Essay on the Circulation of the Blood, by E. GEDDINGS, *M. D. Member of the South Carolina Medical Society, and President of the Charleston Medical Society of Emulation.*

At dixi fluere hunc lutulentum, sœpe ferentem Plura quidem tollenda relinquendis.—*HOR.*

It has always been a source of regret and mortification to the cultivators of medical Science, that it should, in many respects, be so overwhelmed with doubt and uncertainty, as to preclude the possibility of arriving at any thing like fixed and established principles. This apparent fluctuation and instability of character has, indeed, been so great, on many occasions, as to induce some persons, in a spirit of detraction, to deny its claim to the exalted rank of a science. From a superficial consideration of the subject we, perhaps, might be disposed to admit the justness of this degradation of the Healing Art, but when we come to make a scrupulous examination of the various and diversified subjects, which it embraces in its unlimited grasp, we cannot, but be struck with wonder and admiration at the very character of a number of its parts.

In a science embracing such a vast multiplicity of abstruse and intricate subjects for consideration there must, of necessity, be a variety of circumstances, which will bid defiance to the scrupulous exactitude of Mathematical demonstration, I think, therefore, that the doubt and obscurity which exists upon many subjects of medical and Physiological inquiry, may, more justly, be attributed to the inability of the mind of man to unravel the difficulty of the subject of investigation, than to any deficiency it may possess, in point of stability of character.

The mind of man is so constituted by nature, as to be impatient of the rigid restrictions of Philosophical investigation; wearied and disgusted with the devious and intricate march and truth, he at once throws off the trammels of Patient research, by which, alone, his deductions can be just and le-

gitimate, and in the ardour of his misguided inquiries, fabricates some flimsy hopothesis, upon which he builds up a frail and tottering superstructure, and ornaments it with every taudry and extraneous decoration, that can please the fancy or dazzle the imagination. Thus gorgeously decorated with all that creative fancy can invent, it may by the imposing glitter of its exterior, win over a few solitary votaries, who, under the influence of a kind of superstitious reverence, abjure the restrictions of judgment, and make at its shrine, a voluntary offering of their assistance to perpetuate its existence. But destined in the hour of its earliest creation to an ephemeral existence, it is speedily forsaken by its warmest supporters, the heat of their enthusiasm, quickly abating some bold innovator proclaims his independence, subverts the fabric of his predecessors, and erects on its very ruins a new edifice, equally destitute of all validity of structure.

It is to causes, such as these, which have ever tended to clog the wheels of every department of Science, that we are to attribute the rise, and downfall, the growth and decay of the innumerable systems and wild speculations, with which Physiology has been deluged, since the earliest period of its existence as a science; men, instead of confining themselves to a deduction from known and established principles, which is the only legitimate mode of Philosophising, have suffered themselves to be led by a blind enthusiasm into the grossest and most unpardonable absurdities. We constantly evince in our researches after truth a tendency to deviate from the proper course, and instead of circumscribing our labours to the investigation of facts, and deducing from thence our opinions and practice, we are always prone to enquire into first causes, till in the ardour of our pursuit we loose sight of truth and reason, and become entangled in a Labrynth of difficulties, to escape from which, it is necessary to sap the very foundation of sound Philosophy.

We have in the innumerable speculations, and fruitless enquiries, into the nature of the vital principle, an instance, which places in the most conspicuous view, the complete futility of such idle pursuits. This is indeed, a theme, that has exercised and engaged the attention of Philosophers in all ages, without advancing us a single pace nearer a knowledge of its nature, than we were two thousand years ago, instead, therefore, of wandering in search of subtleties, too refined for the human intellect, we should direct our attention to the Phenomena

of nature, and the unerring laws by which they are influenced. It is this, and this alone, can give an unvarying character to our conclusions, and an imperishable treasure to science.

In entering upon the object of our enquiry these reflections naturally arise, since no subject, within the whole range of the Physiological sciences, has given rise to such a mass of vague and contradictory opinions, as the circulation of the blood. Occupying as it does, a most conspicuous rank in most of the Phenomena of life, it is somewhat remarkable, that it should have so long eluded the observation of Physiologists. If we direct our attention to the earliest records of the healing art, we shall find all the Physicians, who lived even in this infancy of science, evincing some indistinct and imperfect views, of this important function. We shall find, however, in their speculations on this subject, little else than a huge mass of crude and undigested absurdities, so that when we are met by an occasional gleam of truth, it is so wrapped up in the mystic darkness of the age; as to preclude the possibility of rescuing it from the thraldom in which it is involved.

Commencing our observations with Hippocrates, the great Father of Physic, we shall find that he had some conception of the pulmonary, or what we denominate the *lesser* circulation. Possessed of a knowledge of this important fact, with his powers of close examination, it is a little singular, that so important a Phenomenon as the circulation of the blood, should escape his researches. But the Philosophers of that age were too much in the habit of deviating from an attentive examination of facts as they occur in nature, in pursuit of analogies, which were preposterous in themselves, and altogether foreign to the subject of Investigation. In explication of many of the Phenomena of vitality, they were in the habit of introducing things which had no analogy in reason or nature.

Thus exposed to erroneous conclusions on every side, we cannot be surprised to see them straying occasionally from the path of truth, and loosing themselves in the mazes of conjecture. We shall accordingly find, from a perusal of their works, much to commend, yet shall often see them allured into error by false analogy, and loosing sight of truth altogether, indulge in the most wild and visionary speculations. Thus they supposed that the blood was conveyed by

the veins to every part of the system, from whence it returned again through the same vessels to the heart: that it passed out during the day, and returned again at night. They even went so far, as to compare the motion of the blood to the ebbing and flowing of the tides of Eripus.

They supposed that the chyle, after being absorbed by the mesenteric veins, was conveyed by them to the liver, in which it was submitted to a depurative process, preparatory to its admixture with the whole mass of blood. The lungs, according to their mistaken views, performed the office of ventilators, moderating the heat of the heart, which they supposed was generated by the violent agitation and friction of the blood.

Previous to the time of Erasistratus, we had no set of vessels, denominated arteries in contradistinction to veins.—But so soon as this Philosopher framed his visionary Hypothesis of the existence of a distinct set of vessels, destined exclusively to carry the animal spirits, the name of Artery was immediately transferred from the Trachea, to which it had been affixed by Hippocrates, and appropriated to these vessels. Hippocrates, and indeed all the Physicians of his time, had a distinct conception of the existence of the vessels, which we denominate Arteries, but they were by them called veins, and in consequence of their violent pulsation, Hippocrates calls the carotids the leaping veins of the neck.

From the circumstance of the arteries being always found empty after death, they supposed that they were destined exclusively for the movement of the animal spirits, which they imagined existed in the left ventricle of the heart; hence they maintained, that the violent leapings and contortions of the arteries, were owing to an effort of the spirits to escape from their place of incarceration.

After the time of Erasistratus the minds of men became so tinctured with the wild enthusiasm of that Philosopher, that loosing sight of things, as they really existed, they compelled every thing to bow in submissive obedience to the bloated chimeras of their master: instead of describing things in conformity to nature, they usurped the very land marks of truth, and substituted the most visionary speculations for plain and legitimate deductions from fact. Being intoxicated by the animal spirits, which existed only in the recesses of their own distempered imaginations, they maintained that arteries, alone, came out from the left, and veins from

the right side of the heart; and although they were sensible that the pulmonary artery was the same in structure as the Aorta which they denominated, Arteria Magna, yet to make every thing conform to their mistaken views, they called it Arteria Venosa; and to the pulmonary veins, though possessing all the distinctive attributes of veins, they applied the name of Venæ Arteriosa.

It was in consequence of this theory, that the right ventricle of the heart was called ventriculus sanguineus, while that of the left was denominated ventriculus spirituosa. Not having any distinct conception of a circulatory motion of the blood, they supposed that this fluid moved straight forward in the veins, and returned again through the same vessels.

But after a while, from seeing the difference which existed between the blood discharged from wounded arteries, and veins they conceived the necessity of mixing the blood, which existed in the right side of the heart with the air and animal spirits, which they supposed to exist in the left. They were, however, soon able to extricate themselves from this difficulty, for they often found, or pretended to find, a communication between the two sides of the heart, by a small portion of the foramen ovale remaining open. This, they conceived, afforded a ready solution of the question.

Haller, evincing his usual scepticism on this subject declares that when they were at any loss for these foramina, "Solebant foramina Parare adigendo stylos Argenteos in resistens septam." But notwithstanding they may have often found these openings wanting, yet, I am disposed to think, that had Haller himself, examined the subject with his usual critical acumen, he would have found them in many instances. That they exist occasionally, I am satisfied from my own repeated examination. To this point we have the concurrent testimony of Bartholin, Marichetti, Mollinetus, Monichen, Broadbecquuous, Soæmering, Godon, and, indeed, a majority of the more modern French and German continental writers on Anatomy and Physiology.

To what purpose this opening may be subservient in the economy of the circulation I am entirely ignorant, nor do I believe it to be a matter of much consequence, since it most certainly cannot answer the purpose which was supposed by some of the older Anatomists. My only motive for speaking of it in this place, is, that it is an Anatomical fact, which appears to have escaped the attention of the Anatomists of

great Britain and America, with the exception of the late Dr. Gordon of Edinburgh, I am not acquainted with a single British Anatomist, who has even mentioned it.

An opinion was about this time propagated and generally received throughout nearly all Europe, that one portion of the blood passed through these pores in the septum of the heart, to mingle with the Animal spirits, while the other portion went through the Pulmonary Artery to nourish the lungs.

They believed that the gross impure blood, which was found in the liver, was unfit for the purposes of life, but that after being exposed to an admixture with the Animal spirits, it underwent some change, which fitted it for the nourishment and growth of the body.

This Theory was warmly supported by Riolanus, the cotemporary and enemy of Harvey, who presumed to oppose this flimsy offspring of his visionary intellect against the luminous discovery of that immortal man, which was destined to enroll his name upon the imperishable pillar of Fame.

In the works of Galen, accustomed, as he was, to copy after Hippocrates, we find little else than an exposition of the opinions of his master on the subject of the circulation. He also appears to have had some conception of the Pulmonary circulation, though this has generally been supposed to be a discovery of more recent date.

From his always discovering the right auricle of the heart distended with blood immediately after the death of the animal, and frequently observing this portion of the heart palpitating violently under the stimulating influence of the blood. He supposed it to be endowed with a superior degree of vitality, which it did not render up, until life was completely extinct in every other part of the body; Hence he called the right auricle the "ultimum moriens," from the circumstance that it continued to act, after all the other parts were, to every appearance, dead.

As we descend from Galen, down to the time of Harvey, we shall find little more, than a repetition of the same puerile conjectures, which served to engross the minds of Philosophers for nearly two thousand years. We shall, indeed, meet with a few obscure hints, which would induce us to suppose, that they were not entirely ignorant of the true course of the blood, but on a critical examination, we shall generally find, that they have reference to the lesser circulation, which, as we have seen, was known to Hippocrates.

As we approach the Epoch of the grand discovery of Harvey, we shall find the opinions becoming more, and more intelligible. Vesalius has described the Pulmonary circulation, but his pupil Columbus, a few years afterwards, attempted to disrobe him of this honour, and vaunted it abroad in the most ostentatious, and ridiculous manner, as a discovery of his own.

About the same time Servetus, Cesalpinus, Sarpi and a number of other Physiologists, evinced some indistinct notion of the circulation, by some allusions to the circular motion of the blood, which are to be found in various parts of their works. But long before this Epoch we find Paulus of Egineta holding such forcible language on the subject, as would induce us to suppose, that if he did not really understand the true course of the blood, he at least, made a nearer approach to a knowledge of this fact, than any man, previous to the time of Harvey. In the part of his book in which he speaks of the pulse he says "Hœ Arteriæ vero oblonga sunt vasa velut venœ, et duas tunicas habent, tunc propter relatum motum, *Tunc quod sanguinem et spiritum continent:* et enascunter ex corde, et dispargentur per omnes corporis partes.* From this it would, at least, appear that he was aware, that the arteries were destined to convey blood, though he might have been ignorant of the course which it pursued, or the nature of the connection between these vessels, and the veins.

Medical Science was doomed to share the effects of the cloud of ignorance and superstition, which, for so many centuries, obscured the horizon of the literary world. Connected, as it is, more or less, with almost every department of knowledge, it was compelled to share in the general wreck, which raized the Temple of Science to its very foundation, and threatened an annihilaton of every vestige of learning from the earth.

Springing up in the genial clime of the East, where the minds of men appeared to be endowed by nature, with that intellectual supremacy, which is calculated to surmount all difficulties, it was cultivated with the most indefatigable zeal and assiduity, and flourished with a success commensurate with that prefection of the arts and sciences, which has stamped an unfading character upon the Grecian name.—But at the very moment when the different departments of

* De Pulsibus Cap. XII.

knowledge, like the happy Governments under which they flourished, had attained to the highest pitch of excellence: when the nations of this happy clime were revelling in the very zenith of their glory, a portentous storm was gathering in the North, which was soon to burst upon their heads, and crush every thing in its ruthless and infuriate course.

The nations, of the North of Europe, the wild and barbarous Vandals and Goths, growing impatient of the yoke which had been imposed upon them by their masters, the Romans; and fired with the prospect of spoil, which these countries, at this time, presented, rushed down from the mountains in hordes, and compelled every thing before them to yield in submissive obedience to their desolating course. The rich and fertile plains were laid waste, the temples profaned and plundered, Schools annihilated, Libraries ransacked and burnt; and, indeed, it appeared, as though they had been under the direction of some minister of distruction, and were determined upon an entire obliteration of every trace of learning and civilization.

From this time all Europe was involved in one general cloud of ignorance. The torch of Bigotry was inflamed at the shrine of superstition, and the iron rod of persecution was plied with an unsparing hand upon those, who had the temerity to abjure their allegiance to the absurdities which ignorance had consecrated, and think for themselves. It is ever thus, when ignorance and superstition hold the reigns of Empire, absurdities are propagated and enforced, with a kind of cabalistic obscurity, which is calculated to impress on the mind of credulity the belief, that they are possessed of the infallability of oracles, emanating directly from the Deity.

Centuries thus rolled on, Science still reposing in this midnight of the human intellect, unable to emerge from the thraldom in which it had been so long slumbering. After a while, however, the *torch* of reason again *blazed* forth, with renovated brightness, and Philosophy bursting from the shackles in which it had been so long bound, imposed quite a different aspect upon the face of science. Discovering the complete futility of many of the doctrines of the Ancients, the Physicians of the age shook off their Allegiance to Hippocrates and Galen, and applied themselves to a patient investigation of things, as they really existed, instead of the refined subtleties, which were the creation of fancy.

It was from patient research, and unwearied investigation of this kind, resulted one of the most important and grand discoveries, that ever decked the annals of any age or country. The great and immortal Harvey, guided by the light of reason, and assisted by his own superior powers of intellect, produced to the world a fact, which not only imparted an everlasting celebrity to the age, in which he lived, but has enstamped upon his name a signet of glory, which will endure, with untarnished lustre, until the remotest posterity.

From an examination into the effects of Ligatures upon the vessels, the disposition of their valves, &c. he demonstrated, that the blood, instead of flowing backwards and forwards in the veins, as had been the belief previous to his time, pursued a circular movement, that it was impelled by the left ventricle of the heart through the Arteries, to every part of the system, from whence it returned again to the right side, by the veins; and passing through the lungs, it was again discharged by the Pulmonary veins into the left ventricle, where it was again submitted to the same mechanism.

This plain and simple doctrine of Harvey, when it was first announced, had to encounter the most violent opposition and ridicule. The proofs, however, which were adduced in its support, were so numerous and forcible, that it soon triumphed over all opposition, and having obtained the assent of Physiologists in all countries, it now remains a towering monument, unshaken by the Revolutions of False Theory, or the sophistications of Philosophy.

He maintained, that the motive powers of the circulation resided exclusively in the heart, which, from this circumstance, he denominated "Fundamentum Vitœ, Princeps omnium," The arteries and veins, he conceived, were mere elastic tubes, destined to convey the blood, without exercising any agency in its propulsion. This opinion was generally received and accredited in the schools, for a length of time, and even at the present day, has numerous and respectable supporters. It is not our intention, however, at present, to enter into an examination of the validity of this Hypothesis. After an attentive consideration of the functions and mechanism of the different parts concerned in the circulation, we shall be better prepared to appreciate the intrinsic merits of the various opinions, which have been advanced on the subject.

Physiologists have pursued different plans in their investigation of the phenomina of the circulation. It has, however, been most usual to commence with a consideration of the heart and its appendages, and from thence, pursuing the blood through the Arteries and Veins, to investigate the different parts which are implicated in the function. Bichat has, however, in his description of the circulation, pursued a plan, which is entirely new. He makes two independent systems, one of which he calls the system of *red*, the other the system of *black* blood, each system commencing in one cappillary system, terminates in the other, and has the heart fixed between, as an agent of impulse. Thus the system of red blood, according to his arrangement, commences in the capillary system of the lungs, and terminates in the general capillary system. The system of black blood, taking its origin from the termination of the other system, ends in the capillaries of the lungs, where the blood is submitted to those changes, by which it is converted from a dark modena red, to a bright vermillion hue.

This arrangement is ingenious, and conforms strictly to the natural Phenomena of the circulation, but, as comporting better with the natural order of the parts, whose agency is concerned, we shall, in our inquiry, commence with a consideration of the heart and its appendages, and proceed to a successive consideration of the parts as they occur.

In conformity to our plan, we shall, therefore, investigate,

I. The heart and percardium :
II. The Arteries:
III. The Veins, and
IV. The Lymphatics:—

We are aware, that it may be objected to the latter part of our arrangement, that the Lymphatics being destined, exclusively, to perform the office of absorption, they cannot be considered as performing any part in the circulation. But believing, as we do, with Magendie, that the veins are the principle instruments of absorption, and, that if the Lymphatics do perform this office, it is not their peculiar and exclusive province, we do not hesitate to rank them amongst the organs of circulation. As we shall, however, have occasion to state our reasons more fully for pursuing this course when we come to the consideration of that part of the subject, we shall say no more at present.

The heart is a very strong hollow muscle, situated in the cavity of the Thorax, between the lungs, and resting on the diaphragm. It is surrounded, on every side, by a dense fibrous membrane, called Pericardium, by which it is confined in its situation, and retained in contact with the diaphram. This membrane is also lined with a very delicate serous membrane, which is reflected over the heart itself, adhering to its surface, and is analagous in its nature to the other serous membranes : as the Pleura and peritoneum ; its office being to lubricate, and moisten the parieties of the heart. This peculiar fluid is denominated liquor, pericardii, and in a state of health is small in quantity, but it frequently happens, from disease of the heart or some of the neighbouring parts, that it accumulates in an unusual quantity, producing dropsy of the pericardium, attended with a long train of obscure and distressing symptoms.

That the principle office of the pericardium is to retain the heart in its proper position is obvious, from the following fact ; If we remove the sternum, and make an incision in the membrane, the heart will often leap from its situation and fall upon the right or left side of the Thorax. "And hence," says an ingenious modern author : "The common and colloqueal expression,derived from the common feeling, of the heart leaping for joy, and it might as well be said for grief and terror, is founded on actual fact.*

Haller, deeming the agency of this membrane so important, supposed that it could never be wanting, but as we have cases, in which the heart itself is absent, so we, also, have well authenticated instances of the deficiency of the pericardium. Two cases of this kind are on record, one by M. Litre, † and the other by Dr. Mathew Baillie. ‡

The heart in man and the more perfect Animals is double, or consists of an auricle and ventricle for the pulmonary circulation, and an auricle and ventricle for the systemic,or greater circulation. From these different cavities all the vessels go out, which send the blood to the different parts of the system, and return it again to the heart. Opening into the right auricle, we have three large veins : the two cavas, and the great coronary, which return the whole of the blood

* Good's study of Medicine, vol. 2 page 7.

† Hist d'acad des sciences 1782.

‡ Transactions of a Society for the improvement of medical knowledge, vol. 1, p. 90.

after it has circulated throughout the system to the heart. From the right ventricle arises the pulmonary artery, which conveys the blood to the lungs, from whence, after it has been decarbonized, it is carried to the left auricle by four large pulmonary veins, The auricle discharges it into the left ventricle, from which arises the large artery of the system, denominated aorta, by which the whole of the blood, destined for the nourishment, support and growth of the body, is circulated.

If we descend, however, in the scale of animated nature, we shall find an apparatus much less complex. In the fishes, and some of the amphibæ, we find only a single auricle and ventricle, and in the turtle, and some others, we shall find the heart made up of a different arrangement. In these there are three ventricles, all communicating, however, in such a manner, as to form one large common cavity. Descending still lower, we shall find no heart, either pulmonary or corporeal. This is the case in the vermes and insects, * and a number of the inferior order of animals, yet the circulation is carried on as perfectly as in man.

The auricle and ventricle of each system communicate by a considerable opening in their septum, which has been denominated, ostium ventriculorum, and each of these openings is provided with a peculiar valvular arrangement, which is placed in the cavities of the ventricles, in such a manner, as to prevent the blood from flowing back into the auricles during the systole of the ventricles. These valves are formed by a peculiar folding of the thin delicate membrane, which lines the whole internal surface of the heart. They have been named, from some fancied resemblance, which they were supposed to have to certain objects : the one between the right auricle and ventricle, consisting of three portions, which were supposed to resemble a spear in shape, has been called Tricuspides, whilst that in the left, consisting of two portions, was supposed to resemble the mitre, hence the name of mitralis has been applied to it.

The mouths of the two great arteries are also provided with a similar arrangement, formed by a folding of the lining membrane of the artery. They have been denominated from their shape semilunares, or sigmoides, and are made up of three segments, which, when properly adjusted, close

* Bloominbach's comparative Anat. p. 247. Cuvier's Lescons l. 23, Sect. 2, A. 4.

up completely the openings of the arteries, and prevent the retrograde motion of the blood, during the dyastole of the ventricles.

The vena cava Ascendens, and the great coronary are likewise guarded with a fold of the inner membrane of the heart, forming a kind of imperfect valve. The valve of the coronary is so perfect, as to prevent the passage of the blood from the auricle into the vein during its contraction. But with respect to the precise office of the Eustachian valve, which is placed at the entrance of the cava, Physiologists are not agreed. Sabatier* and some other Physiologists, restricting the office of this valve to the fœtal œconomy, have denied, that it is subservient to any useful purpose after birth. The occasional absence, or imperfect development of this valve, which is sometimes met with in the adult subject, would, at first sight, appear to countenance the hypothesis of M. Sabatier. But it must be recollected, that it frequently exists in persons far advanced in years, in as great a state of perfection, as in the fœtus. The most perfect specimen of this valve, which I ever saw, was in a very old man, in whom the Arteries were extensively ossified, and the circulatory function was but very imperfectly performed. Cowper has given a description of a fine specimen of this valve, accompanied with an engraving, which was taken from a man 83 years old. It formed a crescent of considerable extent, with a beautiful reticulated edge.

Many Physiologists, in opposition to the theory of Sabatier, have maintained, that the true use of this valve, is to prevent the blood of the superior cava from gravitating upon the column below, and when the auricle contracts, to obviate the retrograde motion of the blood in the cava as ecendens. However plausable and ingenious these speculations may at first sight appear, neither of them will bear a scrupulous examination ; and notwithstanding all the fruitless controversies on this subject, I fear we shall be compelled to acknowledge our entire ignorance of its true office.

The openings of the superior cava, and the four pulmonary veins, are not provided with valves.

The heart is made up of a peculiar arrangement of dense and very compact fleshy substance, differing, however, very much from common muscularity.† From a careful examina-

† Traite Complet d'Anatome, Tome 4.

* Leop. M. A. Caldaui, Memoir lette nelle Acad. di Padova, 1814, p. 67.

tion of this arrangement, we shall see that it is admirably adapted to that powerful and unceasing action, which it is destined to perform, from the period of the earliest development of the embryo, until tired nature, worn out with the unremitting demands upon her resources, sinks into the calm and quiet repose of death.

No subject, perhaps, has perplexed and baffled the Physiologist more than the extrication of the intimate arrangement of the fibres of the heart. Posessing, as it does, such extensive and unwaried powers of exertion, it demanded, at an early period, a large share of their attention; but notwithstanding they bestowed upon the subject their most indefatigable attention, they have never been able to unravel its intricate and inexplicable structure. Vesalius supposed that the fibres were interlaced in a manner analogous to the texture of a wicker basket; and Ruysch contended, that the whole structure was made up of a peculiar arrangement of minute convoluted vessels.*

The more superficial portion appears to be formed of fasciculi passing in an oblique direction, variously branching out, and interlaced in a most intricate manner. They are disposed in strata, lying upon each other, the different fasciculi sending off cross bands, by which they are connected to others, and finally interlacing very closely in the septum, they at last end in the cartilagenous bands at the basis of the ventricles. But as we proceed in our enquiry, we shall find the structure becoming more and more complex, the nearer we approach the cavities of the heart. This is so much so, indeed, that John Bell says, "When we go down into the substance of the heart, we find its fibres all mixed, crossed, and reticulated in a most surprising manner.†

The difficulty attendent upon any attempt to extricate these fibres, is, indeed, so great, that Vesalius, Albinus and Haller, after bestowing upon the subject much labour and attention, declare that it is impossible.

In the cavities of the auricles and ventricles, we find a large number of round fleshey bodies, passing across the auricles and ventricles in various directions, and bound together by small tendinous fibrillæ. The former are called the columnæ carnæ, and the latter chordæ tendinæ. They were supposed by Booerhaave, to contribute to a thorough

* Thesaurus Anat. IV. Tab. III. Fig. 1, 2.
† Anatomy Vol. I. p. 338.

admixture of the blood, during its passage through the heart, and Majendie appears inclined to favour this hypothesis; their most probable use is, however, to strengthen the contraction of the organ.

Lining the whole of the cavities of the heart is a peculiar thin, delicate membrance. It also passes round the fleshy columns forming a complete tunice for those which do not adhere with their sides to the surfice of the heart. It has generally been described as a continuation of the same membrane, which lines the veins and arteries, but that it is altogether different, is, I think, obvious, from the fact, that the internal surface of the heart is highly irritable, whereas the cavity of the vessels exhibits no traces of irritability.

The office of the auricles, requiring comparatively but little muscular strength, are in consequence much looser in their texture, and weaker in their conformation than the ventricles, which, having a much more powerful part to perform, are made up of a peculiarly strong arrangement. But much less strength being required to impel the blood into the lungs, than throughout the whole system, the right ventricle is much weaker than the left. The right ventricle has, also, the greatest capacity; it being able to contain three ounces, while the left can only contain two. The parietes of the left are, however, about three times as strong as the right.*

The substance of the heart is supplied abundantly with blood vessels and nerves. Immediately above the valves of the Aorta two, (and accordlng to Winslow, frequently three) considerable arteries are given off, which ramify through the substance of the heart, and are wholy expended upon this organ. The corresponding veins unite into one common trunk, the great coronary, which as we have seen, discharges its contents into the right auricle. The necessity of this arrangement of the coranary vein exists, from the circumstance that the presence of decarbonized blood in the left ventricle, paralyzes its energies, and finally destroys its irritability altogether. This fact was pointed out by Bichat,† and we see it corroborated in the production of Asphyxia, by the inhalatian of carbonic acid gas.

The nerves, which go to the heart, are derived from various sources, though the greater part of them come from the

* Haller Elementa Phys.
† Exp. Surla Vie et la mort.

medulla spinalis. The first are sent off from the superior cervical ganglion of the sympathetic, which is joined by some from the pharyngial plexus. It also receives some from the trunk of the intercostal and the middle cervical ganglion. To these are joined some from the phrenics and the recurrent of the eighth pair. Some are also sometimes added from the fifth and lower cervicals, and from the lower cervical ganglion.*

This abundant supply of bloodvessels and nerves contributes much to support the heart in the unceasing exertion to which it is submitted. But there has long been a difference of opinion amongst Physiologists, with respect to the precise influence which these nerves exercise over the action of the heart. Some have contended, that this organ is indebted exclusively to the nervous agency for its power of contraction; while others, and particularly Haller, have asserted, that although the motion of the heart is in some degree due to nervous influence, yet it derives much of its contractility from a power inherent in itself, and which exists independent of any connection with the brain or nervous system. Haller has applied to this principle, the name of irritability or "vis insita," in contradistinction to "vis nervæ," which is possessed in an eminent degree by the muscles of voluntary motion, but sparingly by the heart, and other muscles not under the influence of the will.

Anatomists inferred that the brain and nerves were the sources from whence the heart received its power of motion, from the circumstance, that if we irritate the eighth pair of nerves, the brain, or spinal marrow, the action of the heart will be augmented; and that it will become languid from a division of these nerves. But the force of this opinion is invalidated by the well known fact, that the integrity of the action of the heart often remains unimpaired in acephalic animals, and in cases where the brain and spinal marrow have received considerable lesion, either of function or structure. The superior degree of force and energy with which the heart acts in the fœtus, long before the brain is developed, would militate strongly against the validity of this opinion. Thus Blumenbach informs us, that he saw the heart of a chick beat for twelves hours, in an egg, on the fourth day of incubation.†

† Physiology, Lond. Edit. 61.
* Haller.

Another circumstance, which denies the supreme dominion of the nervous agency, is, that the heart when torn from the chest, continues its mechanism, provided the lungs remain pervious, and respiration is continued.

M. Richerand has, however, inferred, from the experiments of Legallois and others, that the heart is exclusively dependent upon the nerves of the spinal marrow for its contractility, and that Haller was wrong, in imputing to the heart any power inherent in itself.

Legallois destroyed the spinal marrow by means of a stilette introduced in the whole length of the vertebral canal, the motion of the heart ceased immediately, and could only be excited again to feeble, irregular contractions, which were incapable of carrying on the circulation, as was proved by the absence of Hemmorrage, on the amputation of the limb of the animal.

It was for a long time believed, that the motion of the heart was kept up by the influence of the cerebral nerves, but more extensive research and patient investigation has taught us, that the brain exercises no direct influence, over the circulation, and that the only aid afforded by the cerebral nerves, in this process, is through the medium of respiration. The lungs, we know, are freely supplied with nerves from the par vagum or the eighth pair, hence if the medulla oblongata be, by any means, injured, or these nerves be divided, or have their integrity impaired, respiration ceases, and as a consecutive effect, the heart fails to perform its office, and the circulation is quickly suspended. The heart, therefore, seems to derive some indirect influence from the medulla oblongata ; and it is upon this principle that we shall be able to understand how it is, that some acephalic animals have been able to subsist for a length of time after birth in a healthy condition, while others, apparently as perfect in their organization, have perished the moment that they were destined to exchange the fœta for the independent existence. This arises entirely from the circumstance, that in the former case, the medulla oblongata, from which the eighth pair of nerves takes their origin, exists ; and the integrity of respiratory function being unimpaired, the circulation is, of course, performed regularly ; whereas in the second case, these nerves being deficient, under which condition the animal exists very well in the fœtal state, since respiration forms no portion of its œconomy, but so soon as it is destined to change

its condition, it must inevitably perish, from the absence of the function of respiration.

The circulation is, indeed, so much under the influence of respiration, that it cannot continue for any length of time after the action of the lungs has been suspended. Cruickshank observed, that on pithing an animal, by dividing the spinal marrow respiration ceased, and the heart continued to circulate black blood for ten or fifteen minutes, after which all action ceased.*

The late very ingenious experiments of M. M. Legallois, Bichat, Dupuytren and Brodie, most incontestably prove, that the brain exercises no control over the motion of the heart further than the function of the lungs is concerned. They observed, that on dividing the nerves of respiration, or cutting off their influence by decapitation, the motion of the lungs ceased immediately, and the contraction of the heart survived but a short time. The struggles of the animal announcing the near approach of the extinction of life, artificial respiration was commenced, and after being continued for a few minutes, the action of the languishing organs was, in some degree, renovated, and the life of the animal protracted for an indefinite length of time.

Mr. Brodie, decapitated animals, and by keeping up artificial respiration, the circulation was continued, attended with the usual changes of colour of the blood in the lungs, but no animal heat was generated, and the secretion of urine was suspended. As soon, however, as the inflation of the lungs was discontinued, the action of the heart languished, and black blood was forced into the systemic ventricle.†

More recently, experiments of a similar kind have been instituted by Dr. Horner of Philadelphia, which resulted in a confirmation of the conclusions of these gentlemen. He infers from the result of his experiments, that the action of the heart is not sustained by any particular portion of the medulla spinalis, but by the whole extent, each section contributing its nervous influence.

In one case the circulation was sustained by the anterior portion of the medulla spinalis; the posterior being destroyed; while in another, it was continued by the agency of the posterior, the anterior being destroyed; and in his second

* Philosophical Transactions, Lond. 1785.
† Medical and Physical Journal.

experiment the circulation was kept up by the extreme cervical and lumbar portions; the dorsal being demolished.

He deduced from his experiments the conclusion, that to keep up a vigorous circulation, when a portion of the spinal marrow had been destroyed, it is only necessary to curtail its extent, by taking up some of the large vessels; or, what is somewhat singular, by decapitating the animal. *

Mr. Legallois, † after bestowing upon the subject much labour and attention, arrives at the conclusion, that the source of the motion of the heart is in the spinal marrow, and that the contractile power of the left ventricle diminishes in proportion to the destruction of the medulla spinalis; and when this is complete, the heart no longer possesses the power of propelling the blood. In reply to the objection which arises from the circumstance, that the motion of the heart continues even after it is completely separated from the body, Mr. Legallois remarks, that these phenomena do not result from the true contractions of the heart, but depend upon its irritability. Before we can admit the justness of these deductions of Mr. Legallois, we must be taught to understand in what the difference between the irritability and contractility of muscular fibres consists. Until then we are forced to conclude, that although the medulla spinalis exercises some sway over the force with which the contractions of the heart are performed, yet it is by no means the exclusive cause of the motion of this organ.

M. M. Dupuytren and Magendie performed a number of experiments, with a view of ascertaining the influence which the Ganglions exercised over the powers of the heart, but their labours proved altogether abortive. They excised the cervical and first thoracic ganglions without being able to observe any direct influence over the circulation. The animals all died, however, from the extent of the wound necessary for their extirpation.‡

Independent, however, of the nervous agency, the heart is possessed of a power of motion which is inseparable from its intimate organization. That there is a faculty in the heart, which enables it to act responsive to the stimulating influence of the blood, is a fact, which has been observed

* Philadelphia Journal, No. 2, 298

† Exp. Sur La Vie.

‡ Pricis Elementaire Tome 2.

from the earliest antiquity. But the particular source from whence it derives this attribute, is a problem, which has puzzled Physiologists in all ages, and even at the present day, the question is far from being established on fixed and immutable principles. Hippocrates attributed it to the innate fire resident in the heart, Sylvius to a fermentation of the blood, which remained in the auricles and ventricles after each systole; and Descartes, in the true spirit of his Philosophy to an explosion. analagous to that of gun-powder. Stahl ascribed it to the Archœus or soul; Swammerdam and Pitcairn supposed that the heart having no antagonizing muscle required an inferior degree of the vital principle in its motion; Haller said it was owing to the irritability of the heart; Darwin and Blumenbach to the oxygen of the blood,* and John Hunter to the stimulus of necessity, and his "Materia vitæ diffusa." Thus we see, from a review of the various researches into this inexplicable subject, we have not been able to obtain a more satisfactory explanation of its nature, than we were in possession of two thousand years ago. In their enquiries into the primary source of this peculiar attribute, Physiologists become entangled in a maze of difficulties from which they could only escape, by substituting a vague and unmeaning term, for a principle, of the nature of which they must forever remain ignorant. But since we are satisfied that such a principle does exist, we should content ourselves with an investigation of its operations, without inquiring into things, which must forever baffle our best directed efforts.

The existence of such a principle in the heart, independent of any influence from, either the cerebral, or spinal nerves, is rendered manifest, by the heart still retaining the ability to act after all this influence has been cut off. Haller was enabled to prolong the action of any particular portion of the heart at pleasure, by admitting its natural stimulus, the blood, to the part which he wished to excite to contraction: and in morebund animals, the motion of the heart continues after being completely isolated from the body.†

In its degree of irritability and permanence of action, the heart surpasses all other organs of the body, with the exception, perhaps, of the tongue, which Mr. Blumenbach has lately discovered to possess this principle in a superior degree to even the heart itself. In the chick it is one of the first

* Societ sic Gœtting, Tome 1.
† Tran. Societ, Scient, Gœtting.

parts developed, and is endowed with powers, which far exceed those of any other viscus in proportion. At this early period of its existence, it enjoys a more extensive and vigorous power of action, unaided either by the brain or nerves, than at any future period of life.

If we examine the heart of the chick during the very first days of its developement, before the parts have yet become distinct, we shall find it pre-emminently irritable, moving briskly on the application of the slightest degree of irritating power; even the slightest change of temperature, or the most trifling breath of air will influence its motion.

And in animals which have been dead for a number of hours, we can excite the heart into quick and rapid contractions, by inflation, by the application of stimuli, or even by a moderate degree of heat or moisture. This property of irritability is enjoyed in very different degrees by the different parts of the animal œconomy: in some of the parts we are scarcely able, by our most minute researches, to detect even the slightest indications of its existence, while in others, and in particular in many of the parts of the system of organic life, as the heart and stomach, it exists in a preeminent degree.

It is, however, in the hearts of the amphibiæ, and some of the inferior order of animals, that we have the most obvious manifestations of a great supply of this principle. The hearts of frogs which have been separated from the body until they have become dry aud shriveled, may again have their contractility awakened, by immersion in warm water. Dr. Gardener informs us, that having neglected the heart of a turtle in his handkerchief, with which he had been experimenting, until it was completely shriveled and dry, he was able to restore its power of contraction, by soaking it in a little tepid water, until its pliability was renewed.

The internal surface of the heart is endowed with a much greater degree of irritability than the external. Long after the external part has refused to be obedient to the action of stimuli, the internal may be aroused to rapid contraction by irritating, or picking it; by the application of blood, or inflating it with little air.

Immediately after the discovery of the circulation of the blood, the heart being looked upon as the only moving power in the circulation, various attempts were made by Physiologists to compute the force of its contractions. These

estimates, as might be expected, differed materially according to the various plans pursued in the enquiry. Borelli computes the power of the heart as equivalent to one hundred and eighty thousand pounds, while Haller estimated it at about fifty-one pounds five ounces, and Keil, barely eight ounces. Nothing can be more contradictory than these different, and opposite statements; and they clearly evince the impractability of making a correct computation of this power.

A number of experiments have likewise been instituted, with a view of ascertaining the force of the left ventricle, by observing the extent, to which the blood was propelled from one of the principal arteries, when divided near the heart. Dr. Hales* saw a stream projected seven and a half feet from the carotid; and Blumenbach, five feet from the same vessel in an adult subject.† It must, however, be manifest, that no correct deductions can be made from experiments, which are based upon such equivocal data, since the experiment must be influenced by a variety of circumstances, over which we can exercise no control. Besides the strength of the ventricle must vary much in different individuals, and in the same individual, in different states of health and disease. Thus, in a person worn down and exhausted, by the pangs of disease, the influence of long protracted fatigue, impure air, pernicious diet, &c. the powers of the heart will of course, be infinitely weaker, than in an individual nerved with full health and vigour.

Physiologists are not agreed with respect to the precise condition of the heart, which follows its systole. Haller affirms, that the auricles and ventricles are in a passive condition, and that they are dilated by the influx of the blood from the veins. He contends, that the heart can have no dilating fibres, from the very nature of its structure: the principal fibres being, according to him, bound together by cross bands, which conneet the whole substance of the heart in such a manner, as to preclude the possibility of any distinct set of these fibres acting separately.

This opinion has generally been accredited, but there are a number of Physiologists who maintain the converse of the proposition, and affirm, that the dyastole is as truly and essentially an active phenomenon, as the systole itself. John

* Statistical Experiments.
† Physiology.

Hunter supposes, that all muscles may be placed in three different conditions: a state of contraction; a state of elongation; and an intermediate state, which he denominates its passive condition, or state of relaxation. Hence, he affirms, that the power of contraction and elongation, exercise a kind of antagonising influence, and that so soon as the contraction, or decurtation of the fibres of the heart ceases, their elongation ensues, and that it is upon this, that the dilatation, or dyastole of the heart depends.

Notwithstanding this explanation of Mr. Hunter's is so vague and unintelligible, it by no means follows, that the heart is not possessed of an active power of dilatation. It is, indeed, so manifest in the action of the hearts of living animals, as to admit of an easy and satisfactory demonstration. "The heart," says Bichat, "dilates of itself when it is empty, as we see by drawing it out of living animals, and afterwards emptying the fluid which it contains, because it has in itself the cause of dilation;"* and the Abbe Spallanzani observed, that on throwing the heart of some frogs in warm water, notwithstanding there was no power to impel the fluid into the cavities, they were filled, and the water was, from time to time, ejected from the cut extremities of the vessels. In this case it is obvious, that the heart must have been dilated by a power inherent in itself, by which a vacuum being produced, the water rushed in; but this fluid acting upon the irritability of the organ, its contractility was called forth, and the water was thrown out in a jet from the great vessels, which had been divided near the heart.

This power, with which the heart dilates itself, has been particularly noticed by Wilson Phillip and Mr. Carson,† who have attempted to build upon it an explanation of the motion of the blood in the veins. As we shall, however, have occasion in a future part of our inquiry to examine into the correctness of their conclusions, we shall pass them over, at present, without any further consideration.

M. Magendie has made a number of experiments in order to ascertain the force of the dilating power of the heart, and he affirms, that he has seen the ventricles dilate in animals recently dead, with a force which would raise twenty pounds. "If," says he, "we seize with the hand the heart of a living animal, however small its size, we shall find it im-

* Anatomie Generale, Tome 1st; also, Anatomie Descriptive, Tome 2.

† See their different papers on the subject in the Periodicals of the day.

possible, whatever force we may exert, to prevent the dilation of the ventricles."*

From a review of what has been said, we are forced to conclude, that the dyastole of the heart is owing to a kind of inherent power, which it posesses within itself, and is not the consequence of the current of blood overcoming its vis inertiæ, as was the opinion of Harvey and his disciples.

Having now completed our consideration of the intimate structure and conformation of the heart, as well as the power by which it is put in motion, we shall, in the next place, proceed to an examination of the passage of the blood thro' this organ.

The blood returned from every part of the body by the great veins, is poured into the right auricle, which, being excited by its appropriate stimulus, contracts, and forces the blood into the right ventricle, which is dilated to receive it. The ventricle in its turn, being filled and stimulated, acts, and propels the blood into the lungs, from whence, after being unloaded of its superabundance of carbon, by the function of the lungs, it is conveyed by the pulmonary veins to the left auricle, which, receiving it in a manner similar to that which took place in the right, empties it into the dilated ventricle, and this, being excited by the stimulating influence of the blood, and perhaps in part by the stimulus of distension, contracts, and drives the blood again throughout the whole system.

The succession of these phenomena do not occur precisely in the order in which they have been described, but we have a kind of double action taking place in the heart at the same instant. The action of the auricle is synchronous, as is also that of the ventricles. Hence, while the auricles are in dyastole, the ventricles are in systole; and, on the contrary, when the auricles are in systole, the ventricles, in their turn, are in dyastole.

From this circumstance we may consider the auricles as reservoirs, which are constantly receiving the blood, and at regular intervals discharging their coutents into the ventricles, which, from their peculiar power and office, may be compared to forcing engines, which are destined to drive the blood into the most remote parts of the system.

It has been usual to estimate the amount of blood, thrown out at each contraction of the ventricle, at two ounces, and

* Prices Elementaire de Physiologie, Tome 2.

the whole mass at upwards of fifty pounds ; and it has been stated by respectable Physiologists, that this immense mass circulates with a velocity, by which it may move through one hundred and forty-nine feet in a minute, and this four thousand eight hundred times in an hour. This is the calculation of Haller and some others, without making allowance for the obstacles, which the blood has to overcome in its passage through the vessels,

But it is impossible to form any correct conclusion from such uncertain data, and it would, perhaps, be as well to acknowledge our inability to arrive at any thing certain, in a case where we have to contend with so many difficulties, which are beyond our control.

That the force, however, is very great, which the heart exercises upon the blood, is manifest from the velocity with which it issues from one of the primitive arteries when divided. This power has been said by some Physiologists to be so great in frogs, as to rupture the aorta when it was obstructed by holding it in a pair of forceps, or on the application of a ligature *

Harvey observing the immense power which the heart exercised in the mechanism of the circulation, elevates it to a rank in the œconomy, to which it was not quite entitled. He considered it as the exclusive source of motion in the circulatory system, and would concede to the arteries and veins no other office, than that of mere elastic tubes, through which the blood was driven by the impulse of the heart.

This opinion, with some modification, is that which has received the sanction of a majority of the Physiologists since his time ; but, however simple, and beautiful it may appear, it is irreconcileable with many of the phenomena of the circulation.

In persons worn out by disease, or debilitated by any of the causes which have a tendency to enfeeble the vital energies, it is evident, that the heart must be so weakened in its powers, as to disqualify it for the fulfilment of so important a duty, and the circulation in the extreme vessels must of necessity, be suspended. Yet, we see in almost every condition of the animal œconomy, no matter how much the energies of the functions of life may be impaired, the blood still moves round the whole range of the circulation, in a manner adequate to the performance of those purposes, to which it

* Bell's Anatomy, vol. 1.

is subservient. Besides, in a number of the inferior animals, as the vermes,* &c. we find no heart, and the blood is moved through the arteries and veins by their own innate powers.

And if we direct our attention to post obit examinations, we shall often find the structure of the heart so changed by disease, as to preclude the possibility of its exercising but a very limited influence on the motion of the blood. Besides, the enlargement and thickening of its parietes, called hypertrophia ; and besides aneurisim ulceration, cancer, &c. we have a great number of well authenticated cases, in which its structure was so changed by ossification, and ligamentous degeneration, as nearly to destroy its power altogether. Yet, in some of these, the patients experienced but slight inconvenience.

Columbus, Veslingeus, Haller, Bonetus, Alburtini, Morgagni,† Bordenave, Simmons, &c. have published cases, in which large portions of the heart were converted into a kind of tendinous, or ossific degeneration: Yet there was not that extensive derangement of the circulation, which we should expect to meet, from such an affection of the heart. The next remarkable affection of the kind which I have been able to find on record, is one described by Mr. Allan Burns.— "The whole extent of the pericardium covering the ventricles, and these themselves, with the exception of about a cubic inch at their apex, were completely ossified, and as hard as the skull.‡ The patient was principally affected, previous to her death, with cough, difficulty of breathing, nausea, constriction in the chest, and diffused pain over the abdomain. In Dr. Simmons' case, the ossification extended from the base to the apex of the heart, and involved both auricles and ventricles.

From an impartial review of these facts, together with an attentive consideration of the phenomena of the circulation, it must, I think, appear manifest, that the heart is incompetent to the discharge of the whole of this important office, and that, although it contributes more than any other agent to the motion of the blood, yet some other power is requisite for the complete performance of the circulation. We shall now proceed, therefore, to enquire into and investigate the instruments of the circulatory system.

[*To be concluded in our next.*]

* Cuvier Lexons d'Anatomie Compan. Blumenbach's Compact. Anat.
† Morgagni de Sed. et Caus. morb.
‡ Diseases of the Heart, by A. Burns.

ART. VII.

CASE OF RUPTURE OF THE FALLOPIAN TUBE:

BY

BENJAMIN SIMONS, M. D.

Charlotte, a coloured woman, the property of Mr. Winthrop, aged about twenty-five years, had been complaining for several days, but not so much as to prevent her attending to her duty. The morning of the day of her death, when she was sweeping a chamber, she suddenly felt debility, with cold sweats, and violent pain in the bowels. Some castor oil was immediately prescribed; it operated well, but without alleviation. In this situation my attendance was requested. The pulse was very feeble, with intermission; cold sweats, with chills; great sensibility about the abdominal parietes; and complained of excruciating pain when these parts were touched; the abdomen was swelled. As the oil had operated freely, and the evacuations natural, the cause of the complaint could not be attributed to any alvine obstruction. No symptoms of dysentery, or inflammation of the stomach and bowels. It could not be tympanitis, for this disease is usually the terminating mode of fever, or of dysentery. The patient had always been healthy, until a few days before her death. The castor oil was ordered to be repeated. In a few hours she expired.

The case being anomalous, an examination of the abdomen was proposed, and consented to.

On opening the abdomen, coagulated and fluid blood, the quantity of a gallon, and of venous colour was discharged, The abdominal viscera, were nicely sponged, to discover the place from whence the hœmorrhage had flowed. The hepatic vessels, the gastric, splenic mesenteric, renal; the trunk of the vena portæ, the cava, and aorta were all entire. The examination was next extended to the uterus and its appendages. A rupture an inch and half in length, of the left Fallopian tube was discovered. The ovum could not be found. The whole of the internal and external organs of generation were removed, and preserved in spirits.

The uterus was three times larger than in the unimpreg-

nated state, a longitudinal incision was made into its cavity to display the membra decidua.

In this case the Fallopian Tube between the place of rupture, and where it enters the uterus was nearly obliterated, so that the ovum could not pass into the uterus. This cause of extra uterine fœtus has not been noticed by any of the writers on the morbid anatomy of the uterus to my knowledge, and it may be the most frequent cause.

ART. VIII.

CASE OF EPILEPSY, WITH APPEARANCES POST MORTEM:

BY

GEORGE LOGAN, M. D.

There is no condition of the human system, contemplated with stronger emotions of awe and sensibility, and none which claims a greater share of the consideration of the Pathologist, than that in which the natural and intellectual functions are suddenly or with the slightest premonitory symptoms suspended, impaired or destroyed. Among the formidable diseases producing this deplorable effect we class *Epilepsy*. The following intesesting case I beg leave to communicate:—

A male slave, aged 48, by profession a gardener, tall and apparently of robust habit, had for seventeen years, (and it is presumed longer,) been affected with this disease; on being interrogated, he said that he was subject to fits in his own country, being an African by birth,

The *Paroxysms* were such as are usually noticed, they occurred in general periodically, after several fits in succession in the course of a day, terminating with stupor of short duration, he continued for three or four weeks in perfect health, he was submissive in disposition; and in temper free from irascibility.

He lived under the circumstances described until December 1814, when he experienced a violent *attack* of *Peripneumony*, from which he recovered with difficulty, it had however the effect of suspending his fits for more than twelve

months, when, after a habit of intemperance in the use of ardent spirits which he unhappily contracted, his disease returned with increased frequency and violence.

Every means, moral and physical, which could be devised in his case failed in relieving him, formerly blood letting, Evacuants, Epispastics, Setons, &c. were beneficial, bnt *now* proved unavailing.—Mercury and other mineral and metallic preparations were in the first instance serviceable, but at this period were ineffectual, his disease resisted every remedy. But, although no salutary effect was produced, his constitution did not seem to suffer materially, and during the intervals he cheerfully pursued his business until the begining of January 1824, when during a fit he fell into the fire place, and was severely and dangerously burnt before assistance could be obtained.

This casualty had no effect upon his disease, and he had not entirely got the better of it, when early on the morning of the 6th inst, he was found by his fellow servants dead in his bed.

He had not complained, nor appeared at all indisposed the preceding night, but not a doubt existed of his having expired a few hours after bed time, and that violent convulsions had supervened, as his features were much distorted, and his body and limbs rigid and cold.

Upon examination, previous to interment, in the presence of several gentlemen, the following phænomena presented themselves.

On removing the Scalp and a portion of the bones of the cranium the Dura mater, exhibited a morbid appearance, the blood vessels being every where in a state of turgescence; upon carefully separating this membrane a prodigious effusion of blood followed, which was discovered to proceed from the *longitudinal sinus* near the centre of its course, a dilatation of its coat, or Varix, of a periform shape, half an inch in its greatest diameter, had here formed, which projected totally and obliquely downward upon the cortical portions, jagged towards its base, where it seemed to have recently burst. Congestion was universally observed upon the Pia mater, and the characteristic cineretious colour of the brain was changed to a brown hue, on further dissection the Ventricles were found to be filled with a serous fluid

The bones forming the basis of the skull exhibited nothing preternatural. Upon inspecting the portion of bones removed

the groove or impression usually made by the longitudinal sinus was deficient, instead of which something like an elevation or ridge was noticed, there was no depression corresponding with the varix mentioned, but the pits on the Parietal bones near the coronal suture were uncommonly large and deep, the diploe obliterated and the bone had become diaphononous.

It is worthy of remark that notwithstanding this manifest disorder in the œconomy of the head, the subject never complained of pain, and during the intervals of his disease was in entire possession of his faculties.

ART. IX.

On the use of the Nondescript, or Cherokee Rose, as a Hedge:

BY

CHARLES E. ROWAND, ESQ.

Messrs. Editors,—Through the medium of your Medical and Agricultural Journal, I will take the liberty of making a communication that I flatter myself will be acceptable to yourselves, and the Agriculturists of the State. Without further comment, therefore, I will state to you that I have, with a great deal of care, reared an Evergreen Hedge of the beautiful Nondescript, or as it seems to have lately assumed the new name of Cherokee Rose, which I have for many years last past, substituted for a wooden fence, and has answered my most sanguine expectations. I have no other upon my plantation, except moveable penns for cattle, hogs, &c. which are made in the usual way. My crop has no other defence against the depredations of cattle, and I can assure you with truth, it resists the attacks of an hog, which is the most formidable animal a planter has to contend with. The mode I adopted to obtain so valuable a desideratum was, first of all to dig three deep and wide trenches, about fifteen or sixteen inches apart, upon the surface of the earth, having

no ditch or bank, into which I inserted obliquely, at the distance of five or six inches, cuttings about fourteen inches long, and eight inches deep; the dirt must be well brought up to the stems, and well trodden in with the feet; the thicker you plant the better. The month of February I have always chosen and always succeeded most in setting out the cuttings.

The Nondescript being a vine, delights in low, moist, rich land, and always thrives, provided due attention is paid to it the first year. It will hardly vegetate when planted upon a bank, or near a ditch, as it is thereby deprived of what it most delights in—moisture. I request to say it is a fault too prevalent among many planters, to neglect plants of this description, viewing them as not forming a part of their crop, and not entitled to their serious attention. But, Messrs. Editors, one moment's reflection will set at nought such false ideas, for the trouble and labour of making a wooden fence annually, is far greater than the rearing so valuable and ornamental a substitute, independent of its beauty, and the little attention paid to it after being reared. In three years, with proper attention an Hedge of the Nondescript can be obtained and will afterwards require no other attendance than a labourer, with a hook, or knife made for the purpose to clip it annually, to keep it in proper shape, which he can do in about a twentieth part of the time that he would take to split the rails, cast them and make the common worm fence, which will last but a few years.

I have taken the liberty, Messrs. Editors, of thus tresspassing upon your time; if you think the communication worth insertion in your Journal, which I think admirably calculated to disseminate knowledge of the most useful kind, it will be a source of pleasure and delight to suppose I could at all be instrumental in furnishing one single item either for instruction or amusement.*

* We shall always be happy to hear from our much respected Correspondent. We wish the Planters generally would direct their attention to this Hedge. It admirably supersedes the use of rails, and must be invaluable to places but thinly wooded. It saves great labour, where wood is plenty, and adds greatly to the beauty and security of a plantation. We had the gratification of seeing Mr. Rowand's Hedge, and with pleasure state it to equal, if not surpass, any which we have seen in Europe, for beauty, luxuriance or security.—*Editors.*

ART. X.

A Letter to the Agricultural Society of South-Carolina, on the Water Culture of Rice, by THOMAS PINCKNEY, ESQ.

The subsequent interesting letter, by our venerable and distinguished fellow-citizen, General THOMAS PINCKNEY, has been some time published by the Agricultural Society; but we could not resist the gratification of having it inserted in our Journal, and we are confident it will be highly acceptable to our readers.—*Editors.*

CHARLESTON, 12th Dec. 1810.

DEAR SIR,—Having last year made an experiment, on a small scale, of cultivating Rice, in a manner which, I believe, has not heretofore been practised in the United States, and having this year repeated the experiment much more extensively, with such a degree of success, as, in my opinion, to warrant further trial, I am induced to request the favour of you to lay before the Society the following account of the method pursued, with its result.

I have taken pains, for a considerable time past, to obtain correct information concerning the production of this grain, in countries where, in consequence of its long establishment and extensive use, I was induced to believe that experience must have suggested the most advantageous mode of culture; and I observed in the course of this investigation, that the practice of those countries differed considerably from our own; particularly in the application of water: for I found that in them, Rice was generally sown and grew to maturity in land continually inundated to a greater or less depth; except during the short intervals necessary for the occasional shifting the water. I, therefore, determined to endeavour to ascertain what advantage that method might possess over the practice which generally prevails among us of keeping our Rice-fields dry for a considerable portion of the first half of its growth.

Various accidents, to which the state of agriculture in this country renders us peculiarly liable, prevented me from ob-

taining the result of my first experiments, with such accuracy as to enable me to lay them before the Society; they were, however, sufficiently satisfactory to myself to induce me to persevere; and, on Friday, the 5th day of May, 1809, I directed five bushels of Seed Rice to be sprouted, which was effected by putting it into a rice-tierce filled with water, which gradually leaked out after the Rice had been well soaked; and on the Monday following, the grains being fully swollen, and some of it having protruded the germ, it was spread out, some slaked lime sifted over it, to facilitate the distribution, and was immediately sown in a little more than two acres of ground;—this small field had been planted with Rice several preceding years, and had then been prepared, by the stubble having been hoed off and burned, and the soil turned and made fine by the hoe: part of it was sown in drills at the distance of about sixteen inches from centre to centre, and the remainder broad cast: the seed was not covered, but the water very gradually brought over it, covering the land six inches deep on the general level, but being ten inches deep on the lower parts of the fields, and scarcely two inches over the highest: directions were given to retain the water constantly, as nearly as could be, at that height, keeping it sweet and cool, by occasionally admitting fresh tide-water, and by turning through it a small drain from the high land. The Rice grew through the water, and in about a fortnight, the points of the leaves were seen floating on the surface. In those parts where the water had covered the land six or more inches, no weeds or grass appeared, except a few leaves of the wampee and some rushes. In the higher parts especially, near the edges, some water grasses appeared; all these however, were effectually removed, being picked by hand out of the water, by the application of labour, equal to the work of three labourers for one day. This Rice, when ripe, was separately harvested, and yielded one hundred and fifteen bushels and one peck of clean heavy grain; the drilled appeared better than the broad-cast, but no accurate account of their relative product was kept; and, in fact, the whole experiment is deficient in accuracy, because the land being a small detached piece of very irregular shape, it was difficult to ascertain its precise contents. Its product, however, certainly exceeded the average of the whole plantation that year, and the comparative experiment was so far satisfactory, that this product also considerably exceeded the

crops of the two preceding years made from the same land, neither of which crops exceeded ninety bushels. It was also proved, satisfactorily, by this trial, that rice would germinate, grow through and tiller, or branch out, well in land constantly covered with from six to ten inches of water.

In the present year I have cultivated, in this mode, twenty-two acres at my upper plantation on Santee river, and forty-eight acres of my lower place. A field of twenty-two acres at the plantation of my mother-in-law, Mrs. Motte, has been subjected to the same process; and my son-in-law, Mr. John Middleton, has cultivated, in the same way, a small field containing seven and a half acres, at the plantation whereon he resides. The whole of these are tide-lands, and as the method used in all of them was nearly similar, I will not trespass on the patience of the Society, by the details of more than one of them, and will select for that purpose the comparative experiment made at my upper place, because it was made on two fields so similar in quantity, quality of soil, previous treatment, and indeed, in every respect, that a fairer test of the merit of each mode, could scarcely be made in one year.

Each of these fields contains twenty-two acres of our usual plantation measure, (210 feet square to the acre) they are precisely of the same shape; the soil in both is a light black mould, on a blue clay foundation; the clay, however, lies too low to effect the quality of the upper stratrum, which is too light, they both have been cultivated upwards of twenty years successively, in Rice, and are only divided from each other by a bank: the drains and ditches in both were clean, the remains of the last year's stubble were burnt off, and the ground prepared, by being once ploughed and harrowed, and assisted by the hoe in low places where the plough could not do good work; the whole was then ploughed with what we call a trenching plough, into drills, being, on an average, nearly eighty in number on each quarter of an acre (105 feet square) and the seed having been put to soak in water the day before, (No. 1 being the field intended for the common culture) was sown at the rate of two bushels an acre, (heaped measure) on the 28th day of March: the seed was not covered but was suffered to lie in the open trench during the night after it was sown, that it might better adhere to the soil, and not be displaced on the introduction of the water, which was slowly brought over it the succeeding morning:—

this water continued over the land five days, when finding, on examination, that some of the grains began to sprout, the field was dried and continued so until the Rice was old enough to admit of being hoed, when that operation was well executed, and the land still kept dry, until the growth of the Rice and the appearance of some grass among it called for a second weeding, which was well executed by hoeing the intervals, and picking by hand, all the grass from the rows of the Rice ; it then received what is commonly called the long flowing, the water being thrown on the land, to the depth of six or eight inches on the general level, where it was retained sixteen days, only occasionally shifting a little of it to keep it pure. The water was then gradually withdrawn, and as soon as the land was sufficiently dry, a third hoeing was given, stirring the ground well and picking out all the grass and weeds from among the Rice : it was then kept dry until it had formed a joint, when the water was again introduced and continued, with occasional freshening, until it was let off to dry the field for harvest ; but during this flowing the grass and weeds which had come forward since the third hoeing, were pulled out by hand. It was begun to be cut down on the first day of September, and when thrashed and winnowed, yielded nine hundred and ninety bushels of Rough Rice, weighing forty-six pounds per bushel.

I have so minutely described the method used in this field, that the Society might be enabled to judge how far this part of the experiment was properly conducted.

The field, No. 2, intended for the *water culture*, was treated exactly in the same manner as No. 1, until after it was sown, except that the seed prepared for it, was longer soaked and approached nearer to germination ; and that one half acre was sown on the 2d, and the water introduced on the 3d of April, and was kept as nearly as could be flowed to the depth of six inches, on the general level, until the 21st of May ; the ground, however was so uneven, that I measured several plants of rice which had just appeared above the surface, and found that they had grown through 17 inches of water, while some high parts of the field were not covered 3 inches deep. On the 21st of May, the Rice now standing up firmly, the whole of the water was turned off and some hands sent in to pull out the weeds, and on the 22d the water was re-admitted and retained until the 30th of June, when it was again completely shifted ; immediately after

which the field was again flowed, until the 14th of July, when it was once more emptied and renewed the succeeding day; and in addition to these total changes the water was partially freshened as often as circumstances would admit. Immediately after the 14th of July, the Rice began to put out the ear, and was ready for the sickle on the 22d day of August, but on account of rainy weather, on that, and the two succeeding days, it was not begun to be cut until the 25th of that month.

Some wampee and rushes appeared early in this field, and the washing of the loose earth from the banks covered the seed in the adjoining rows so deep that the rice did not come through it, and some labour was bestowed in transplanting into those rows.

The quantity of labour expended on this field, between sowing and harvest, was as follows:

May 17th	Eight labourers picking out weeds, etc. half a day each,	4 days work.
21st.	22 labourers the whole day,	22
	Nine transplanting on margin,	9
24th	One raking off green scum,	1
25th	One ditto ditto,	1
June 30th	Twenty-two hands picking rushes, wampee, etc.	22
	Total days work,	59

The product of this field when thrashed and winnowed, was 1069 bushels of rough rice, weighing 46 pounds per bushel.

This field must have suffered some injury from my having left home about a week after it was sown, without having given sufficient directions concerning the shifting of the water, at an early period of its growth. I was absent near three weeks, and on my return found a considerable quantity of green scum among it, which gave it a very unpromising appearance; the rice was then in that state that it would have been thrown down if the water had been altogether withdrawn, it was, therefore, only freshened partially, and the water was not totally changed until the 21st of May; and as I am of opinion that pure water is as essential to keep rice in a flourishing condition, as pure air is to the health of animals, I have no doubt but that this field would have yiel-

ded more grain but for this neglect. The half acre, whereof the seed was not soaked, grew equally well through the water, was as early ripe, and to all appearance as good as the rest of the field.

One field of twelve and another of fourteen acres were sown at my lower plantation, on Santee river, on the 25th of April, and treated in the same manner; they were both harvested soon after the storm in September—the twelve acres yielded five hundred and ten bushels, and the fourteen acres six hundred and thirty-two bushels of rice, weighing forty-five pounds to the bushel.—A violent gust of wind passed through the plantation while this rice was growing through the water, being then six or seven inches long, and the agitation of the waves drew up a considerable quantity of the plants by the roots, from the fourteen acre field, this left the rice, as we then thought, too thin in that field. The twelve acre field was not so much effected by the storm, and stood very regular and thick, and it proved, at harvest, that it was too thick, for the ears were much smaller than those of the fourteen acre, and it yielded only at the rate of forty-two and an half bushels per acre, while the other gave at the rate of forty-five.

Another field of twenty-two and a quarter of an acre, very much broken by a large creek, was sown on the 10th of May and subjected to the same treatment. It yielded one thousand and twelve bushels, or nearly at the rate of forty-six bushels per acre, of rice weighing forty-seven pounds per bushel. The rice in this field also, stood too thick, and one rood which had been sowed *broad cast*, *injudiciously*, scarcely produced any grain. One hundred and forty-four days labour was applied between sowing and harvest to these three fields, containing, together, forty-eight acres and a quarter, being precisely three days labour of one hand bestowed on each acre.

The field of twenty-two acres, cultivated at Mrs. Motte's plantation, was so very much polluted with rushes, wampee, and the species of jointed conch grass, called here blanket grass, that the labour bestowed on it was very considerable, and the product bad, nor was this product so accurately separated from the rest of the crop as to enable me to state the amount. I was not present when it was harvested, but on walking over the field, and examining the stubble, I found many patches where the rice appeared to have been totally

destroyed by the weeds, but where that was not the case, the Rice appeared to have grown perfectly well, the ears of what I was shown as part of the crop was certainly fine, but the deficiencies were so great that I should not estimate the product at more than a barrel and a half, or thirty bushels, per acre. One observation was, however, afforded by this trial, which is, that the accumulation of green scum or water moss, was prevented by twice shifting the water completely, during the night, before the Rice had progressed beyond the point or needle state : and another hint of some importance may be collected from it, namely, not to attempt this mode of culture in fields so foul with water grasses.

The field of about seven acres, cultivated according to this plan, by Mr. John Middleton, was sown on the 18th of April and reaped on the 3d of September, and yielded thirty-five bushels per acre, weighing forty-five pounds per bushel ; the labour bestowed on it was equal to the labour of one hand for eleven days.—This field also, was not in good order, and the Rice evidently stood much too thick in it, except on the margins, which failed almost entirely, owing, I presume, to the same cause as mentioned in the first experiment.—It was remarkable that this field, which was sown on the 18th April, was reaped on the same day with another field, which had been sown on the 28th of March, making a difference of twenty-one days ; and this acceleration of maturity attended all the fields thus watered, though not in so great a degree :—I think, however, the trials I have made will authorize me to promise, that Rice, cultivated in this mode, will be fit for harvest at least ten days before that treated in the usual manner.

My object, in troubling the Society with the above tedious detail being to induce some of our members to give this method a fair trial ; I hope to be excused if I trespass a little longer on their patience, by explaining the reasons why I consider it worthy of their attention.

I think it is evident in the first place that to pursue this system, much less intelligence will be required in the cultivators, than the mode usually adopted ; and, when we consider the general want of information in the agents commonly employed, this must appear a considerable advantage. Every practical planter knows that to understand the proper periods when the water should be admitted ; to what depth the land should be flowed ; how long the water should be

retained, and how often the irrigation should be repeated, requires experience, judgment and attention. In the method I recommend, the watering process is certainly more simple, nothing being required but to admit the water from the first to a certain height over the land, and to retain it steadily through the whole growth at that height, the only skill and attention necessary to this part of the business being to keep the water pure and sweet, by changing it partially, or altogether, as often as is necessary for that purpose, and as circumstances will permit.

Of the advantages this method possesses over the common mode as it respects the saving of labour, the comparative statement, exhibited above, furnishes abundant proof; and when the disadvantages arising from want of experience are considered, little doubt can, I think, be entertained, but that a few years practice, would enable us to diminish even the small portion of labour, applied in these trials, and the application of the labour, so saved, to other useful purposes would certainly be peculiarly beneficial to the land holders of the lower country, where many persons possessing more land than they can cultivate, it must be of the utmost importance to them to have more than three fourths of their labourers relieved from their present occupations for one third of the year, and ready to be employed in bringing into cultivation valuable land now lying useless, or of more highly improving that now in use. Many planters also, who have not now the leisure to prepare materials for building and to erect dams sufficient to enable them to use water-mills, and other machinery for manufacturing their crops would no longer be prevented from enjoying that benefit. Such also as have good high land near their swamps, would be enabled to plant cotton or other valuable products in addition to their rice crops; and they whose high lands are of inferior quality might improve them by manures, which, in our lower country, are every where at hand; for the worst of what is called pine barren, abounds in weeds and plants which grow luxuriantly in the summer; and every part of vegetable as well as animal substances, may be converted into good manure. It is not therefore, the scarcity of that article, but the want of labour necessary to collect, prepare, and transport it, that occasions this great improvement to be so little used among us. Lime, which is known to act so beneficially as a manure on the texture of sandy soils, might,

during this season of leisure, be burnt from the shells, with which our sea-coast abounds, within the reach of most of our rice planters, and either applied to the melioration of the soil, or sold to considerable profit at market; and, where timber abounds, sawing for market would prove a beneficial resource. But in no respect would this system, if successfully pursued, afford such permanent advantage and satisfaction as in the improved health of the persons actively employed in the cultivation; for it must be evident that the exhalation from the water frequently shifted and kept in a state as pure as is here recommended, would be far less deleterious, than that arising from the mud of the swamps after the water is withdrawn. Any person who has passed near a rice-field within a few days after the water has been let off from it must be convinced of the truth of this observation. But a further improvement in the health of our labourers may reasonably be expected to result from the experience which, of late years, has amply proved, that our pine-barrens, removed but a small distance from the swamps, and especially where a barrier or screen of trees is kept between them, afford residences infinitely more healthful than the immediate vicinity of rice-fields. If then, we shall find our labourers no longer bound to reside near the rice-fields by the attention and work necessary to be performed in them, according to the present plan, is it unreasonable to hope, that we shall, by degrees, and as circumstances may admit, remove our settlements to convenient distances in the higher lands, where our people might be employed to advantage, and enjoy better health? A few persons, in this case, must necessarily be left to attend to the watering process; and when the rice approaches to maturity the water should be withdrawn a few days earlier than is now customary, which would not injure the crop, but would suffer the first and greatest exhalations to pass off before the attendance of the labourers would be necessary in the field.

Before I conclude I will mention one more advantage that may possibly attend this mode, without entering into any detail concerning it, which is, that this mode of culture seems calculated to admit with advantage the practice of transplanting rice, whereby we may be enabled to obtain two crops in one year, from a considerable portion of our land; this, I find, is a practice generally pursued in Egypt, in China, in Industan, in the Philipine Islands, and in Spain; and

I hope next year to have it in my power to offer to the society the result of an experiment I have begun, with the hope of ascertaining whether this practice may be beneficially adopted in the culture of our rice lands.

It may have the appearance of presumption in a person having so little experience in this mode of culture, and who, it is evident, from the above detail, committed several errors in his former trials, to offer instructions on the subject; but, hoping that such of my friends as may be induced to try this mode may profit by my mistakes, I will venture to recommend to them to keep their land dry all the winter, and to plough and harrow, or turn and break the soil, with the hoe, as well and as often as circumstances will admit, and for this purpose the land should be enclosed with good banks and well drained; by this the growth of the roots and seeds of aquatic plants, which alone are to be feared in this culture, will be much checked if not destroyed. Until further experiments shall have ascertained it to be unnecessary, I would advise that the seed should be steeped in water for, at least, twenty-four hours before sowing, and then sown as usual in drills, (that in case the experiment should so far fail as to render hoeing necessary, that operation might be performed) as in this mode of sowing nearly every grain sown germinates. I believe from one and an half to one and three quarters of a bushel of seed to the acre, will be found sufficient, giving the largest quantity to those parts of the field which are lowest. The seed should by no means be covered by earth, but the water admitted slowly in the morning of the day after sowing, and increased gradually to as great depth as the supply of water and situation of the banks will admit, whereby all the loose stubble and trash in the field will float and be driven by the prevailing wind to one side or corner of it; this trash should be removed, and, immediately after, the water reduced to six inches over the general level of the field. In the afternoon of the fifth day after sowing, the water should be entirely withdrawn from the field and readmitted with the next tide, or early in the morning of the next day. In five or six days more this complete change of water should be repeated, taking care to effect it while the Rice is still in the needle state, and consequently not liable to be thrown down. After this the water must be kept on steadily until the Rice shall have grown through it and stands firmly; observing only to freshen it oc-

casionally by drawing off one or two inches and raising it again with the next tide to its standard. As soon as the Rice stands up strongly, the water should be entirely changed, and that process repeated two or three time (or oftener if it be necessary to keep the water quite pure and fresh) before it is finally taken off to dry the field for harvest.

I remain, with the utmost respect, Dear Sir,

Your faithful and obedient servant,

THOMAS PINCKNEY.

JOHN CHAMPNEYS, Esq.

President of the Agricultural Society of South-Carolina.

ART. XI.

Letters to JOHN HUME, *Esq. President of the Agricultural Society, on the application of Lime to Marsh Land, and an experiment on the culture of the Sweet Potatoe : by* JOHN MIDDLETON. *Esq.*

CHARLESTON, 21st Feb. 1825.

SIR,—In some of my Marsh Rice-fields, there are spots of ground so impregnated with salt or alum, as not to produce any thing. The last spring I applied lime, at the rate of 100 bushels the acre, to some of the parts affected, and made at the rate of two and a half barrels to the acre ; the other part of the field yielded three barrels more.

The spots where no lime was used, yielding nothing as usual. The Rice would germinate and die. In some cases it would come up and then die, either during or after the point flow. In others, it would live in an unhealthy state, until the long flow. There are some spots that will not produce any thing.

I have limited one spot, and will communicate the result at a future period.

Your obedient servant,

JOHN MIDDLETON.

CHARLESTON, 21*st Feb.* 1825.

SIR,—In April last I planted eighteen alternate rows of Potatoes, with whole and cut seed.

The nine rows of whole seed produced fourteen bushels of large and three of small Potatoes. The cut produced eight bushels of large and four of small. Thus the product of the whole seed exceeded that of the cut by five bushels.

At the same time, by request of Mr. Allston, I planted the same number of contiguous rows, with seed sent by him from Mrs. Horry's plantation.

The whole seed yielded four bushels of large and two of small Potatoes; the cut two bushels of each—in favour of the whole seed, two bushels.

The eighteen rows planted with seed grown by myself, produced nineteen bushels more than those that were sown with the seed sent by Mr. Allston.

This experiment certainly proves the superiority of the whole over the cut, and the necessity of a selection of seed.

Your obedient servant,

J. MIDDLETON.

ANATOMY AND PHYSIOLOGY.

ANTOMMARCHI'S *Plates.*—We perceive that the Royal Institute of France has received the highly eulogistic report of M. Dumeril respecting this work, which we have shewn in a former part of this number, to be a very shamefully plagiarised copy of the superb plates of Mascagni. The plates of the skeleton, we perceive, are announced, and these at least Antommarchi must get drawn, as he does not happen to possess those of Mascagni.—*Anderson's Quart. Journ. London.*

Comparative Anatomy.—In this fertile field we have so many labourers, chiefly foreign, and so many works and memoirs in illustration, that we could fill our whole number with nothing else. As the subject, however, is less popular in this country, because, though interesting, it is less directly useful than many others, we must be brief. Oken, of Copenhagen, has published in the 7th number of the Isis, a very learned paper on the Dentary System of Animals, and M. Geoffroi St. Hilaire, has taken up the same subject in the Mammalia and Birds, in a work, the first part of which is just published. M. Gandolfi, of Bologna, in the Opuscol. Scientifici, pursuing this monographically, has investigated the dentition of the *sus scrofa*, and has found that the dentition is double, as in the wild boar.—*Ib.*

Hairs in the Stomach of the Cuckoo.—M. Carus, in a paper in Oken's Isis, has proved that there exist hairs in the stomach of the cuckoo, attached to its internal membrane, and resisting digestion. This fact, together with their being constantly found there (M. Carus having found them in twenty stomachs which he examined), proves that they are not, as had been imagined, the hairs of caterpillars swallowed for food.—*Ib.*

MAGENDIE'S *Experiment on the Olfactory Nerves, explained by* Mr. C. BELL.—The discoveries of the French physiologists are very much like those of astronomers, who sweep the sky for comets—all random and guess work. English physiology is less dashy at first, but it wears better. Magendie's paradox, for example, that the olfactory nerves are not the nerves of smelling (see our last number, p. 620) is clearly and philosophically accounted for by Mr. Charles Bell.*—*Ib.*

* We regret to observe so sweeping an anathema against the French Physiologists. The Editor of the Quarterly Journal must have forgotten that to the French we are materially indebted, not only for many discoveries, but for some of the best works on Physiology. We could wish to see a greater candour and liberality of feeling

"In the exercise," says Mr. Bell, "of the sense of smelling, parts are employed, which do not, at first, seem necessary. For the highest enjoyment or exercise of the sense of smelling, it is necessary that the stream of air inhaled thro' the nostrils should change its direction, and be increased in force. In breathing through the nose, the air is carried directly backward. If the nostrils are expanded in anxious or hurried respiration, the passage is enlarged, and made more direct. But, perhaps, my reader is not aware that in each nostril there are two circular openings, the innermost something more than half an inch within the other. This interior circle expands, and becomes lower when the breath is forcibly drawn into the lungs; but in the act of smelling, it is much diminished and elevated. The change in the form and relation of the exterior and internal nostril is performed by the action of the muscles on the cartilages; and the effect of the change is to increase the force of the stream of air, and to direct it up towards the seat of the sense of smelling. In common breathing, some part of the effluvia afloat in the atmosphere reaches the seat of the sense; but fully to exercise the sense, it is necessary to concentrate and direct the stream of air, as I have described.

"It will now be comprehended how the destruction of the portio dura, or respiratory nerve of the face, affects the organ of smelling; for if, by the injury of that nerve, the motion of the muscles of the nostrils be lost, the breath may be drawn into the lungs through the relaxed passage; but it will not be drawn forcibly up towards the seat of the olfactory nerve, nor will the air brush over the surface on which the proper nerve of sense is expanded.

"A man, being paralytic on one side of the face, by the loss of power in the portio dura, was made to smell ammonia: it did not affect the paralytic side, because it was forcibly inhaled into the cells of the nose only on the side where the nostril was moveable. On trying the experiment on a dog, in whom the portio dura of one side had been cut, the same thing was manifested; he snuffed it up with the sound side, and showed the natural consequence of the irritation of the membrane; while he was not similarly affected, when the bottle was put to the paralytic nostril.

scientific men of different nations. Science is confined to no particular spot, and scientific men of whatever nation, so far as science is concerned, should be looked upon as citizens of the world.—*Editors.*

"Unless I had attended to the structure and function of the part, on witnessing these phenomena, I might have conceived that the seventh nerve was the nerve of smelling, like a noted French physiologist, who concluded, too hastily, that he had discovered the nerve of vision and of smelling in the fifth nerve. I allude to certain experiments lately performed in London by a distinguished visitor, [Magendie,] which afford a proof of the utter impossibility of reasoning correctly on these subjects without the knowledge of the anatomy. The olfactory nerve was destroyed, and ammonia put to the nostrils of the animal, and when the creature sneezed, it was a coup de theatre! then the gentlemen congratulated themselves that it was discovered that the first pair of nerves was of no use!! The common irritability of the Schneiderian membrane results from the fifth nerve: why does the membrane possess this sensibility, and why is the sensibility joined to the actions of the respiratory system? Because these passages must be guarded as the larynx is guarded. When any thing offensive is lodged there it must be removed, and the means Nature employs is to drive the air by an instinctive action of the respiratory organs, violently and suddenly, through the nostrils. But what has this to do with smelling? As well might we destroy the olfactory nerve, and wonder that the creature experimented on still coughed when the larynx was tickled.

"We have some observations on this subject, in Mr. Shaw's paper already quoted. 'The effect upon the nostril is the most obvious symptom, when the nerve is cut in the ass. If, after having cut the right nerve, (portio dura,) we hold the nostril for a short time, so as to prevent the animal from breathing, he will, when freed, begin to snort, but with the left nostril only. If we hold carbonate of ammonia to the paralyzed nostril, he will be affected; but if it be held to the other, he will snuff it up, and then curl the nostril, and have an expression in the whole of that side of the face, as if he were going to sneeze, while the right side will remain quite unmoved.'

"The rationale of this is worth attention; by the neglect of it, some physiologists and experimenters have appeared to much disadvantage. The act of smelling is not simply drawing breath; but while the breath is drawn, there is a conformity in the motion of the nostril, by which the air, loaded with effluvia, is directed to the seat of the olfactory

nerve ; that is to say, is made to circulate in the higher parts of the cavities of the nose, instead of streaming directly backwards into the posterior nostrils. This was the reason why, on putting the ammonia to the nostril which was still, the creature was not excited, although there had been nothing done to injure the sensibility of that side of the nose. If a man were simply to draw his breath in taking snuff, the powder would be drawn into his fauces and lungs ; but to snuff, the point of the nose is drawn down, and the nostrils contracted, and then when the air is inhaled, the snuff rises to the superior cells, and stimulates all the interior of the nostril. Although by this stimulus he sneezes, the olfactory nerve has nothing to do with it. The luxury is in the stimulus of the respiratory system, through the excitement of the membrane, not in the odour as enjoyed by the olfactory nerve. The sensitive branches of the fifth are first excited, then the respiratory system is in a secondary manner affected ; and to ascertain whether the mode of communication between the fifth and the respiratory nerves be affected at their roots in the brain, or at their extremities, is a fair question to be determined by experiment or reasoning."

Dr. Wollaston *on Single Vision with Two Eyes.*—" So long as our consideration of the functions of a pair of eyes is confined to the performance of healthy eyes in common vision, when we remark that only one impression is made upon the mind, though two images are formed at the same moment on corresponding parts of our two eyes, we may rest satisfied in ascribing the apparent unity of the impression to habitual sympathy of the parts without endeavouring to trace further the origin of that sympathy, or the reason why, in infancy, the eyes ever assume one certain direction of correspondence, in preference to squinting.

" But, when we regard sympathy as arising from structure, and dependant on connexion of nervous fibres, we therein see a distinct origin, of that habit, and have presented to us a manifest cause why infants first begin to give the corresponding direction to their eyes, and we clearly gain a stept in the solution, if not a full explanation, of the long agitated question of single vision with two eyes."—*Philosophical Transactions.*

M. Chevereux *on Cholesterine in the Bile.*—This chemist, from his having discovered the presence of cholesterine in the bile, is persuaded that we may hence be led to chemical re-

medies for biliary calculi, on the same principle that lithontriptics are prescribed for gravel and urinary calculi, since the discovery of the uric acid.—*Magendie's Journal.*

On the causes of Animal Heat.—The following are some of the conclusions obtained by M. Desprety, during the course of his experimental investigation of the causes of animal heat :—

1st. Respiration is the principal cause of the developement of animal heat; assimilation, the motion of the blood, the friction of various parts, may produce the small remaining portion.

2d. Besides the oxygen employed in the production of carbonic acid, another portion of this gas, which is sometimes very considerable in proportion to the first, also disappears; it is supposed, generally, that it is employed in the combustion of hydrogen of the blood. In general more oxygen disappears in the respiration of young animals than in that of adults.

3. Exhalation of nitrogen takes place in the respiration of those mammiferous animals which are carnivorous or frugivorous, and in the respiration of birds; the quantity of nitrogen exhaled being greater in frugivorous than carnivorous animals.—*Annal de Chim.* xxvi. 360.

Experiments on the Heart.—Mr. Wiltbank, of Philadelphia, has instituted some experiments on the snapping turtle, (Testudo Serpentaria) to prove the action of the heart independent of nervous influence ; one of which we copy.

Exper. 6th.—We took off part of the inferior shell of another snapping turtle, and observed the motion of the heart without opening the pericardium : its pulsations were ascertained to be 26 in a minute. In a half of an hour, the principal vessels were tied, and the heart removed from the body. The ventricle being gorged with blood, pulsated 96 times in the minute ; while the auricles at the same time beat 48. The ventricle was now separated from the auricles, when instantly its pulsations were reduced to 12 in the minute. After a few minutes the two separated portions pulsated for a time alternately, and 19 in the minute. In one hour the animal from which the heart was taken was set at liberty, and evinced clearly the power of locomotion, exercised volition, showed anger, turned to defend itself, and snapped at any thing held before it. It then crawled away several yards, and hid itself in the grass. In an hour and a quarter, the

ventricle pulsated seventeen in a minute, but the auricles had entirely ceased to move. In an hour and three quarters the animal still moved, hissed and snapped, but appeared to be more feeble. When laid on its back, it could not now, as before, restore itself to its natural position. The motion of the ventricles had, in two hours, entirely ceased. In three hours the animal evacuated its fœces and moved along : in five hours it appeared quite dead.—*Philad. Journ. No.* 18.

Case of Menstruation from the Mammæ.—M. Buttner, a practitioner at Halbustadt, has published a case of this kind. It occurred in an hysterical woman who experienced the ordinary symptoms of menstruation, which subsided when five or six spoonsful of sanguineous fluid had been evacuated from the nipples. This lasted about six days, when a white mucous discharge supervened.*—*Journ. der. Praktischen, Heilkunde.*

PATHOLOGY.

Sublingual Pustules in Hydrophobia.—The Prussian Minister has addressed a circular to the medical profession, recommending a careful search for the sublingual pustules, mentioned by M. Marochetti, in cases of hydrophobia. In consequence of this Dr. Baumbach, of Erfurt, in attending a woman who had been bit in the finger by a rabid cat, and was decidedly hydrophobic, found the pustulues, cauterized them, and the patient recovered. Etmuller and Idéler had not the same success in treating an old man of sixty, near Mersebourg, who was bit by a rabid cat on the 23d March, 1823. He remained well till the 16th of May, when he was seized with a burning, eating pain, in the place which had been bitten, though it had been a long while cicatrized. He was also convulsed and hydrophobic. They found four sublingual pustules, which they cauterised as Marochetti directs, but the patient died the 19th May.—*Bulletin Univ. Oct.* 1824.

Atrophy of the Gall Bladder.—M. Nacquart detailed to the Academie Royale de Medecine, the case of an individual who formerly had a tumour formed by the Gall Bladder, in the right hypocondriac region, whence issued bile and biliary calculi. The person recovered, and the tumour disappeared, but some time afterwards he died, and on examination no trace of gall bladder could be found : the place where it is

* A similar case has come under the observation of a practitioner of this city. The particulars of which will be inserted in our next.—*Editors.*

usually situated was supplied by cellular tissue. A similar case was given by M. Ollivier.—*London Med. Repository, March* 1825.

M. Legallois presented, at the meeting of the Academy, the vena cava of a subject, with the right iliac vein and the saphœna of the same side, completely obliterated, and filled by a fibrinous, solid and organized deposit; having in some points all the appearance of muscular flesh. The individual from whom this piece of morbid structure was taken, died of ascites and leuco-phlegmasia of the lower extremities.—*Ib.*

M. Moreau presented at the meeting of the "Acadamie Royale of Medecine" of Paris, on the 30th of Nov. a fœtus of six months, without brain and with a bifid spine at its vertical portion. It was without any abdominal parietes and the viscera of this cavity was contained in the base or fœtal extremity of the cord which was a trasparent cord to them. The heart passed into this cavity through a congenital opening in the diapragm.—*Ib.*

M. Bacon, presented to the meeting of the academy of the 14th of December, the heart of a person who died suddenly of a rupture of this organ. The rupture was situated at its middle part, near the anterior aspect of the left ventricle. The margins of the laceration, which was about three lines in length, were somewhat thin, but without any appearance of ulceration. The muscular substance was not observably softened in this portion of the parietes of the ventricle.—*Ib.*

PRACTICE OF MEDICINE AND SURGERY.

Case of a Tænia found in the Bladder.—The following case must be received with interest, as it appears to be the only one of the kind on record It was communicated by Dr. Darbon, who is well known for his various attempts made at the Hotel-Dieu and la Maison de Charite, to expel the Tape-worm. Many Physicians before him had found round worms in the kidneys and bladder. Geron has published the case of a woman affected with ischuria, produced by worms in the kidneys, and who passed three by the urethra. Tulpins speaks of a long, round, and very red worm rejected with the urine. Ambrose Parey says, that Louis Durat passed similar worms after a protracted disease. Panzani met with a priest of fifty years of age, who had felt a constant pain in that part of the bladder which corresponds with the centre of the os sacrum: the symptoms appeared to in-

dicate a stone in that viscus ; but two ascaris lumbricoides having been discharged with the urine, he was suddenly relieved. Ducerf cites the case of a person afflicted with a permanent pain in the lumbar region, whose urine was almost always red and with sediment, and who, at intervals, experienced a considerable hœmaturia, with excruciating pain in the kidneys and bladder : this patient became completely emaciated, notwithstanding all the care of Professor Halle, and after a discharge of blood by the urethra, a slight fever and violent pain in the kydneys and bladder, he rejected with the urine, a worm of the size of a quill, and afterwards fifty others of different shapes, but mostly of the intestinal lumbricoide form ; after the expulsion of which, he was entirely cured. Dr. Robe Moreau attended a lady subject to a dysuria, accompanied with pain in the lumbar region, shootings about the pubis, a continual inclination to make water, &c. who was immediately relieved in discharging from the bladder a lumbricoide, alive. Chopart, Dumeril, Stromaier, Moublet, Raisin, Chris. Olombel, &c. have published similar observations ; but the most singular one, is that of a worm forming the nucleus of a stone found in the bladder.—*Editors.*

" Mr. A——, aged fifty, had been for some time tormented with an intolerable itching about the anus ; when he was suddenly attacked with violent cramps in the penis, accompanied with such excruciating pain, that he lost his senses for several hours. Having recovered, he felt a very great desire to make water ; but many minutes elapsed before he could emit a little urine, with several joints of the tape-worm; after which, this excretion took place with facility. The pain subsided for seven or eight days, when the same symptoms returned with chillings, soreness of the limbs, retraction of the penis towards the pubis, and also the testicles, which were very painful. The scrotum became slate colour, and this was undoubtedly occasioned by a slimy perspiration, that tinged the linen blue.* The patient experienced a similar attack, which terminated by passing other fragments of the Tænia. Those fits generally took place every eight days and lasted from twelve to fourteen hours. During one of them, a piece of six inches in length came through the

* It is to be regretted that Dr. Darbon did not keep a piece of the linen to ascertain whether this blue colour was not owing to the hydrocianal of iron, as has been found in urine of a blue colour, and in the pass of some cancerous ulcers.

urethra, and so much impeded the emission of the urine, that the patient was in a most alarming situation, Mr. A—— had been one year in this condition, when he applied to Dr. Darbon, who after having ascertained the existence of the Tænia, first emptied the bladder in injecting warm water into it. He next introduced by the assistance of a hallow probe, his remedy for the tape-worm, and left the instrument in the urethra, that the excretion of the urine might take place without carrying along any of the worm. He renewed the injection of his mixture two days in succession ; and suffered the probe to remain five days more. The ninth day having withdrawn the instrument, the patient excreted with his urine, several yards of the Tænia, mostly disarticulated and much decayed : Mr. A—— has since been delivered of all pain."

Case of Waunded Stomach.—Dr. Lovell, Surgeon Gen. of U. S. Army, has recorded a case of a boy, who received the contents of a musket in his left side, which fractured several of his ribs, and blew off some, lacerated the left lobe of the lungs and diaphragm, and perforated the stomach. In six weeks the lacerated sides of the stomach united with the pleura costalis, and external wound, thus preventing effusion into the cavity of the abdomen. This wound resembled a natural anus, with a slight prolapsus, except in the deficiency of a sphincter. At the end of a year he got quite well, but this opening continued, through which fluid swallowed, passed, except when retained by placing a plug in the orifice and retaining it with a compress and bandage ; his appetite is good and his digestion perfect. " On removing the dressings," says Dr. L. " I frequently find the stomach inverted to the size and about the shape of a half blown damask rose. Yet he complains of no pain, and it will return itself; or is easily reduced by gentle pressure. When he lies upon the opposite side, I can look directly into the cavity of the stomach, observe its motion, and almost see the process of digestion. I can pour in water with a funnel, or put in food with a spoon, and draw them out again with a syphon. I have frequently suspended flesh, raw and roasted, and other substances in the hole, to ascertain the length of time required to digest each, and at one time used a plug of raw beef instead of lint, to stop the orifice, and found that in lesss than five hours it was completely digested off as smooth and even as if it had been cut by a knife.

Dr. L. promises to make some experiments regarding digestion.—*Medical Recorder, No. 29.*

Stricture of Urethra.—Mr. Shaw, of London, in a paper on Stricture of the Urethra, has recommended, when the passage is so obliterated as to prevent the passage of a bougie or catheter, that the stricture should be cut through, a catheter introduced through which the urine must pass, and the wound allowed to granulate over the catheter. The Editor of the Philadelphia Journal, in a note to a long extract from Mr. Shaw, observes: "This operation was proposed and practised in many instances with full success, by Dr. H. G. Jamieson, of Baltimore, nearly a year anterior to this proposition of Mr. Shaw." We beg leave to say, that Dr. B. B. Simons, of this city, performed this operation between fifteen or sixteen years ago, with success, and has frequently performed it since; and we are authorized by that distinguished surgeon to say, that he saw Sir William Blizzard perform it many times in the London Hospital, between twenty and thirty years since.—*Editors.*

Efficacy of Tartar Emetic Ointment.—Dr. Tonelli speaks highly of the efficacy of this remedy in fevers, pleurisies, chronic catarrhs, rheumatism, tubercular suppurations, acute asthmas, hydrothorax, &c. One drachm and a half of tartar emetic to the same quantity of lard, is rubbed together, and rubbed on the epigastrium, the anterior part of the thorax, and at the same time on the back, between the internal margin of the scapula and the vertebral column.*—*Annati. Universali.*

Power of Belladonna in preventing Scarlatina.—It is asserted by German physicians of great respectability, that the use of Belladonna, will secure persons from taking scarlatina, a disease although mild among us, extremely aggravated and fatal in Europe. The plan proposed is to take a "portion only of a grain of the extract or powder every day; or a solution is employed of grs. iij. of the extract to the ounce, or three drops being given twice a day to a child un-

* I have used this remedy for two years in chronic affections, in place of blisters, and found last summer, an acute case, apparently a signal benefit from it. A child labouring under yellow fever, could contain nothing on the stomach, and was puking black vomit; at the same time enemas exhibited were as quickly rejected, without producing alvine evacuations. Under these circumstances I made the attendant rub tartar emetic ointment frequently on the whole abdomen, and spine. The irritability of stomach ceased, and free and copious alvine evacuations ensued and large crops of pustules appeared over the cutaneous surface. Other remedies suitable to the case were afterwards applied, and the child recovered. T. Y. SIMONS, *one of the Editors.*

der twelve months and an additional drop for every additional year. Dr. Koreff asserts that after eight or nine days use of the medicine, no danger need be apprehended of receiving the disease, and the celebrated Soemmering has been witness of its efficacy.*—*Vide Rev. Medicale*, 1824.

Epilepsy.—Dr. Laurent, of Versailles, presented to the Royal Medical Academy of Paris, at their meeting in August last, a young epileptic girl, whose paroxisms are attended with an involuntary action backwards. As soon as the attack begins, the little patient walks irresistibly backwards, stretching her arms forward and does not stop until some obstacle makes her fall. May not the cerebellum be the principal seat of disease in this case, according to M. Magendie's experiments.—*Arch. Cen. de Med. Sept.* 1824.

Rupture of the Aorta, occasioned by the introduction of a bone in the œsophagus.—The subject of this remark was received in the Marine Hospital of Rochefort, with symptoms of pneumonia of the left lung, accompanied with an acute pain towards the spine. An antiphlogistic treatement was resorted to, which appeared to relieve the patient; but on the 10th day, after a fit of coughing and a copious vomiting of blood, he expired. The chest was opened and exhibited signs of pneumonia. Towards the middle of that cavity, the œsophagus presented an ulceration of nearly the size of a quarter of a dollar, which had occasioned a similar one on the aorta, and consequently its rupture two inches below its great curvature, where a pyramidal bone, of an inch in length, was found; it weighed 18 grains, and was very sharp at its superior extremity, which had penetrated in the aorta. It was afterwards discovered that the bone had been swallowed ten days before he resorted to medical aid. A similar case is recorded in the school of Montpellier.—*Ib. October* 1824.

Uterine Hæmorrhage.—At a meeting of the Royal Medical Academy, Mr. Ezrat read a memoir on the use of citric acid in uterine hæmorrhage after confinement. His method consists in introducing in the uterus, a lime stripped of the skin, and cut at one of its ends, which he squeezes and leaves in that organ. Contraction is instantaneously excited by

* If this be confirmed by more extensive experiments and prove not to be a hasty conclusion from a few isolated facts, it may eventuate in the discovery of preventives for other epidemics which devastate the human race. The misfortune, however, with our profession, is, that whenever we take up a theory, we are too apt to seek every evidence which may confirm and neglect whatever may refute.—*Editors.*

the irritation produced by the acid and the lime itself, which is immediately expelled when the hæmorrhages stops.—*Ib. Jan.* 1825.

CHEMICAL SCIENCE.

Temperature of the Sun, &c.—M. Dulong communicated a letter from M. Pouillet, in which that philosopher announced, that he was occupied with experiments relative to the measure of very elevated temperatures, such as those on the surface of incandescent bodies, or bodies in ignition, of flames, and particularly of the sun. The instrument used by M. Pouillet to obtain these results is founded on the properties of radiant heat, and principally on this datum; that a body, the bulb of a thermometer for instance, perfectly insulated in the midst of a sphere of ice, but so placed as to receive the rays of the sun through a circular aperture of such a form and position, that all the lines forming tangents to the sun and the ball may pass through it, will be heated precisely in the same manner as if it were supposed that a portion of the surface of the sun, or of a body heated to the same temperature exactly filled the aperture in the ice. M. Pouillet, among other results, states, that the temperature of the sun thus determined is 1400 degree (2552 degrees F.)—*Proceedings of the society of Pharmacy of Paris.—Jour. de Pharm.* 1824, 415.

Security of Steam Engines.—The Royal Academy of Paris, has been called upon by the government, to report on the means proper to be adopted for the prevention of accidents and injury from the explosion of steam engine boilers. The means proposed had the double object of preventing the rupture of the boilers, or in case of their destruction, preventing injury to neighbouring buildings. They directed that the boiler should be proved by the hydraulic press, with a force five times that which they would have to bear during the working of the engines: that a safety valve should be attached to the boiler and locked up, the valve being so loaded as to open at a pressure just above that by which the boilers have been tried: that the boiler should be surrounded by a wall of masonry one metre (39,371 inches) in thickness; an interval of a metre being left between the boiler and the wall, and again between the wall and the neighbouring buildings. Another precaution has been added by M. Dupin, and adopted by the Academy; namely, the introduction of a metallic

plug into the upper surface of the boilers formed of such an alloy as should melt at a temperature a few degrees above that at which the engine is intended to work.

In consequence of this application, it became necessary to form a table of the pressure and temperature of vapour The academy appear very doubtful of estimations as yet published, but give the following table up to eight atmospheres, as nearly correct: above that they say it was impossible to go without further experiments.

Elasticity in atmospheres.	Height of mercury.	Temperature of Fah.	Pressure on a square inch.
1	29,92 in	212°,0	14,61 lbs. avoir.
1 1-2	44,88	234,0	21,92
2	59,84	251,6	29,23
2 1-2	74,80	264,2	36,44
3	89,66	275,0	43,84
3 1-2	94,73	285,3	51,15
4	119,69	293,4	58,46
4 1-2	134,65	302,0	65,76
5	149,61	309,2	73,07
5 1-2	164,57	316,5	80,37
6	179,53	322,7	87,69
6 1-2	194,49	328,5	94,99
7	209,45	334,4	102,30
7 1-2	224,41	339,3	109,60
8	239,37	343,4	116,92

It is advised, that no direction should be given for the composition of the fusible plugs or plates, but their preparation intrusted to some competent person who should be responsible for the accuracy of their fusing points. The fittest place for them, all things being considered, is the upper surface of the boiler. Their proper diameter and thickness have not yet been ascertained; they should be such as to bear the force of the vapour without risk of breaking; and when the plate is fused, to leave an aperture sufficient for the ready escape of the vapour.—*Ann. de Chimie.* xxvii. 95.

Purification of Vinous Liquors, from Fruits.—M. Cadet de Vaux states, that the very different products obtained by distilling the fermented liquors of various kinds of mellow and sweet fruits, may be purified and rendered almost identical with each other, by re-distilling the product with milk. As an instance, he quotes the comparison of a liquor he obtained from plums, as compared with the *kirschwasser* or

cherry water of the best kind. The plums, when fermented, gave a wine, which being unfit for the market, was distilled; but the product obtained was weak, was precipitated white by water, and was very inferior in flavour and value. On adding milk to it, when put into the still a second time, the latter instantly curdled; and when the distillation was completed, the product was found to be so good and excellent in its flavour and other qualities as to deceive the best judges, who took it for real cherry water, as made directly from cherries.—*Bulletin des Sciences.*

Conversion of Oxalate and Formiate of Ammonia into Hydrocyanic Acid—Professor Dobereiner has proved, by experiment, the occurrence of a phenomenon, the possibility of which he had previously inferred. It is, the conversion of the oxalate of ammonia into cyanogen and water. If this salt be mixed with oxalate of manganese, and heated by a spirit lamp in a glass tube closed at one end, we obtain, besides carbonic oxide and carbonate of ammonia, water and cyanogen, but the cyanogen is speedily converted, by the action of the carbonate of ammonia and water, into hydrocyanic acid.

The formiate of ammonia decomposed in a glass retort, is also converted into hydrocyanic acid and water.—*Phil. Mag.* lxiv. 234.

Preservation of Fish during Carriage.—For ensuring the sweetness of fish conveyed by land carriage, it is proposed, that the belly of the fish should be opened, and the internal parts sprinkled with powdered charcoal.—*N. M. Mag.*

Pacilline.—M. Paretta gives this appellation to a white powdery substance, with a peculiar colour, and insoluble in cold water, obtained from sassaparilla; and which he considers, from therapcutical experiments, to be the active principle of that plant.—*Proc. of the Acad. Royale de Med.*

Erlanite, a New Mineral.—This mineral was observed by Breithaupt, in 1818, in different parts of the Saxon Erzgebirg. It forms a part of the oldest gneiss formation, and is always mixed with more or less mica. Between Grose-Pohle and Erla there exists a bed of it, at least 100 fathoms in thickness. It has been used for upwards of 200 years as a flux by the iron smelters, and until its examination by Breithaupt it had been uniformly mistaken for limestone.

Characters—Lustre, feeble shining to dull; streaks, shining with a fatty lustre; colour, light greenish grey; streak,

white massive : sometime compact, sometimes in small and fine granular distinct concretions ; fracture, in some specimens foliated, in others splintery and even ; structure distinctly crystalline, but as yet no regular cleavage obtained ; hardness between that of apatite and actionolite ; specific gravity from 3 to 3.1. Before the blow-pipe readily melts into a slightly coloured, transparent, compact bead. It resembles gehlenite more than any other mineral ; is distinguished from fel-spar by greater specific gravity, and from saussurite by inferior specific gravity and hardness. It is composed, according to Gmelin, of

Silica,	53,160	Oxide of Manganese	0,639
Alumina,	14,034	Volatile matter	0,606
Lime,	14,397	Loss	1,995
Soda,	2,611		
Magnesia,	5,420		100,000
Oxide of Iron,	7,138	*Ann. Phil, N. S.* viii. 389.	

DOMESTIC INTELLIGENCE.

Medical College of South-Carolina.—This Institution closed its session on the first Monday of April, when Medical Degrees were conferred on the following Gentlemen :

ELI GEDDINGS, Abbeville, South-Carolina, *on the Circulation of the Blood.*

J. P. GAVIN, Georgia, *Cholera Infantum.*

W. C. WEBB, Charleston, S. C. *Febris Remittens.*

CHARLES W. GRAYSON, Beaufort, S. C. *on the Bilious Remittent as it appeared in the town and vicinity of Beaufort.*

J. L. FELDER, Sumpter District, S. C. *Gun-Shot Wounds.*

And Honorary Diplomas on the following Gentlemen :

DR. MATHEW IRVINE, Charleston, S. C.

DR. JAMES DAVIS, Columbia, S. C.

DR. MILTON ANTHONY, Augusta, Georgia.

STEPHEN ELLIOTT, L. L. D. Professor of Botany and Natural History of the Medical College of South-Carolina.

Medicated Vapor Bath Dispensary.—An institution of this kind, upon the plan of Mr. Whitlaw, established by an Association and conducted by three Medical Gentlemen is now in operation. Least this should be considered as operating

upon mountebank principles, we are authorized to say that a fair and impartial trial will be given of its powers. For our part, we think it must be highly serviceable as an auxiliary treatment in all chronic and cutaneous diseases.—*Ed.*

The following summary was drawn np and kindly presented us by CHARLES E. ROWAND, Esq. Secretary of the Agricultural Society.

SOUTH-CAROLINA AGRICULTURAL SOCIETY.

The Cattle Shew, under the patronage of the South-Carolina Agricultural Society, took place on Monday and Tuesday, the 21st and 22d of February last, at which time were exhibited some of the finest specimens of the Short Horned or North Devon breed that have appeared in the low country. The Society was much gratified with the zeal displayed by the owners bringing them up for exhibition in such high order, and have no hesitation in declaring they think them an acquisition to the state.

A very fine Sow, of the English breed, imported from Liverpool, about two years ago, with her two Pigs littered last summer, attracted much attention, from their extraordinary size and beautiful shape at so young an age. Several purchasers offered for them.

A Ram and Ewe, of the Tunisian and Bakewell breed, raised upon Wadmalaw, reflected much credit upon their owner; after having obtained the Premium, they were sold for a good price.

Several other Animals were brought on the ground, but none of them first rate; they were barely passable. It is but justice however to say, that their blood could be traced to some fine stock, and we hope from the encouragement held out by the Society, it may operate as a stimulus to Planters, to use their utmost endeavours to revive the Agriculture of the low country. The weather was fine, but was made disagreeable by an Easterly wind, which, with the attraction at the race ground, of the horses practising for the week, prevented many persons from attending.

The following is a list of the Premiums awarded by the Society, viz.—

"To Mr. J. D. LEGARE for his Bull Hamlet, of the English North Devon

breed, whose sire was from the Cattle presented to Messrs. Caton and Patterson, and his dam to Mr. Rufus King, by Mr. Coke, of Norfolk, he being the first Bull exhibited for improving the breed of Milch Cattle—*The Gold Medal.*

To Mr. J. Dewees for the best Bull for raising working Oxen; his sire an English Bull imported by Captain McNeal, and his dam, the Cow which obtained the premium of the Society in the year 1824—*The Gold Medal.*

To Mr. Randall Robinson for the best Cow for improving the breed of Milch Cattle; she being of the improved short-horned breed, and was purchased of Mr. John Hare Powell, of Pennsylvania, from his celebrated stock of cattle—*The Gold Medal.*

To Colonel John Bryan for his Mare Medusa; being the best exhibited for improving the breed of Farming Horses—*The Gold Medal.*

To Mr. James McPherson for his full-blooded Sorrel Filly, by Pocotaligo—*The Gold Medal.*

To Mr. Hugh Wilson for his Ram of the mixt Tunisian and Bakewell breed, being the best Ram exhibited—*The Silver Medal.*

To Mr. Hugh Wilson for the best Ewe, being of the same breed—*The Silver Medal.*

To Mr. Wm. Washington for the best Sow; being imported from England, and exhibited with two fine pigs as a specimen of her progeny—*The Silver Medal.*

To Dr. John S. Bellinger for the best crop of Flint Corn—*The Gold Medal.*

And it is with great satisfaction the Committee recommend that the Gold Medal, being the Premium offered for the Manager of two or more Plantations, who shall produce the most satisfactory testimonials of diligence, skill, good management and humanity, shall be awarded to Mr. Jordan Myrick, as they have never examined more ample testimonials of exemplary conduct, than those given by the respectable planters by whom he has been employed for twenty years, completely according with all the qualifications required by the resolution.

The Committee regret that they cannot award to Mr. E. B. Hort, the premium for a Machine, whereby the moteing of Cotton may be *completely* performed. The Cotton Whipping Gin which he exhibited, not being calculated to operate, so as to completely supersede the necessity of moteing; but as an ingenious auxiliary to facilitate that important and tedious operation, they recommend it to the attention of the Society."

There was only one candidate for the Premium for Corn, and that barely over the quantity prescribed. The cause of which is obvious. It cannot but be fresh in the painful recollection of every one, that the disastrous hurricane of the last year, blasted the prospects of the Planters, spreading desolation in every quarter.

Among the various communications was one from our faithful and valuable correspondent, Mr. Malory, U. States Consul, resident at Tangiers, accompanying a small parcel of very fine and large grained Rye, informing that a large box, containing many rare and choice seeds from Tangiers

and its neighbourhood, was now on its way to South-Carolina, for the use of the Society. Great advantages must, no doubt, result from such a correspondent, and of which the Society will certainly avail themselves.

Fourteen Tea Plants, of the Bohea and Green, in full vigor, were also displayed, imported by order of the Society; they were distributed among the members, who promised to take care of them. These plants can be viewed at any time, by any person wishing to see them, by calling at the houses of the respective members to whom they were entrusted.*

It must be a source of delight to those interested, to hear of the various communications that have been made. It presents the gratifying view of the increase of Agricultural intelligence, aud the flattering prospect of future improvements.†

Before I conclude this little summary, permit me to recommend to breeders of horses, cattle, hogs, and animals of every description, and why not include the feathered tribe, the propriety of bringing them annually to the Cattle Shew, where an opportunity is offered to sell to advantage, the produce of their farm, of whatsoever nature it may be, thereby not only affording a reward for their labors, but a great increase to their income, and an additional proof of what can be done in our own state, if we only determine to act.

I regret to say that Agriculture is at a low ebb, but an annual exhibition of every thing in the Agricultural line, is one of the many ways to restore it. We possess the means, and it is our own fault if we do not use them. Whatever aid the Agricultural Society can afford, I feel confident in asserting, will be granted. Let all therefore unite, and endeavour to promote the much wished for object—the improvement of Agriculture; bearing always in mind, as a stimulus to exertion, the fundamental principles which influenced our Society in the distribution of their Premiums. *Qui meruit Palmam, ille ferat.*†

* Mr. Noisette has the Tea Plant in his hot-house, which he has reared from the seed.—*Editors.*

† See Dr. Johnson's and Mr. Middleton's Letters in this number.—*Editors.*

‡ We heartily concur with our respected correspondent in his remarks. From the spirit and energy which now is exercised among our Agricultural Societies, their increase throughout our state, and the respectability of the members composing them we look forward with sanguine expectations to the rapid advancement of every department of Agriculture, and we here again respectfully beg leave to say, that our Journal is open for the insertion of any useful communications which may be made to either of the Agricultural Societies, or which may be sent us by any individual.—*Editors.*